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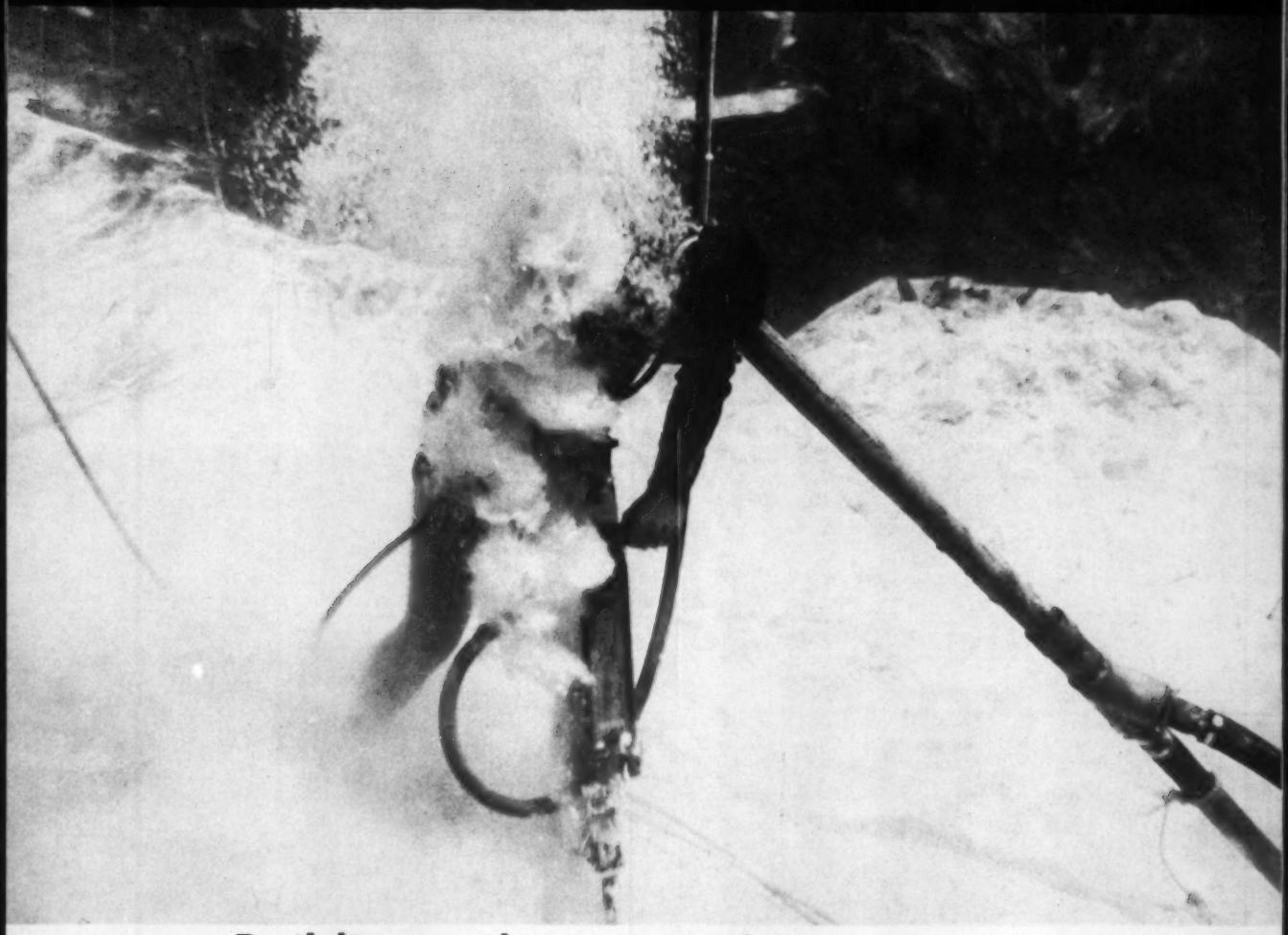

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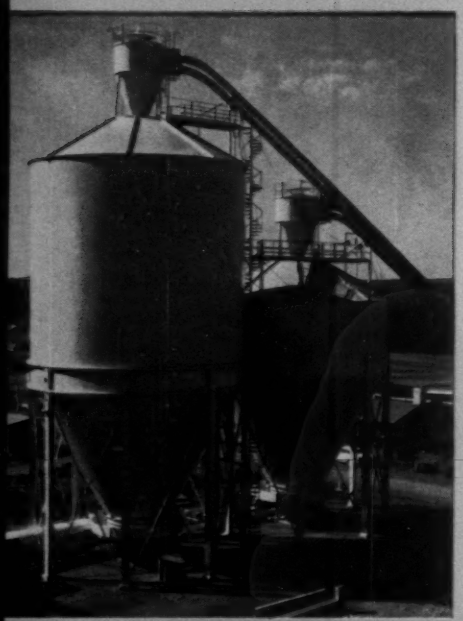

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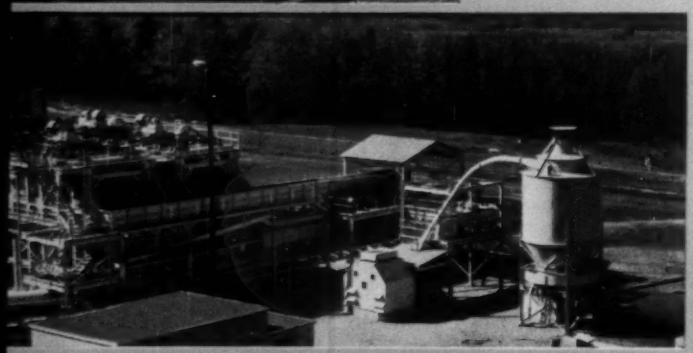

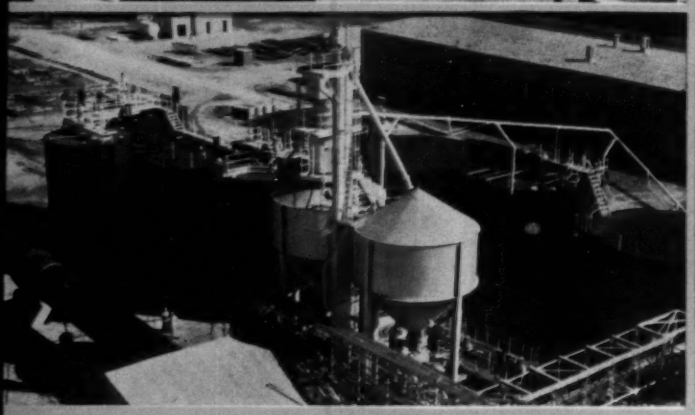

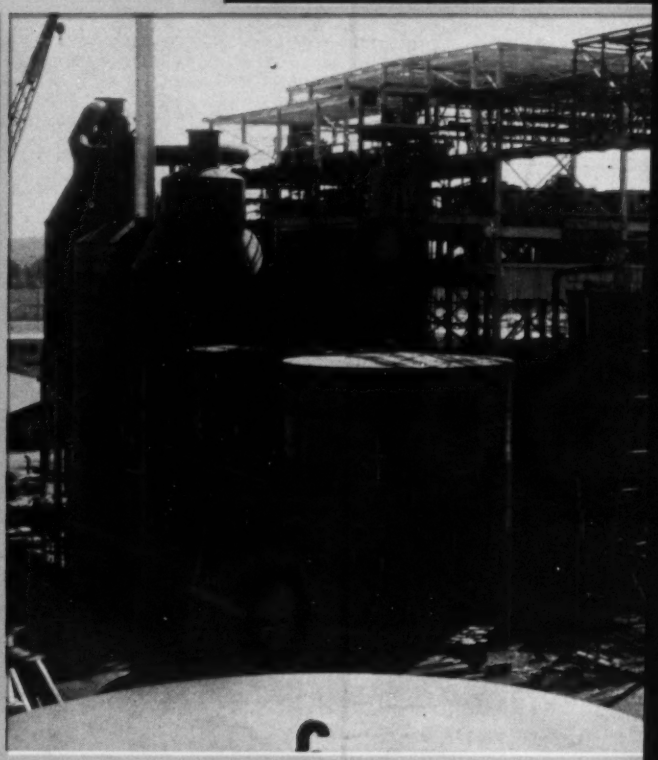

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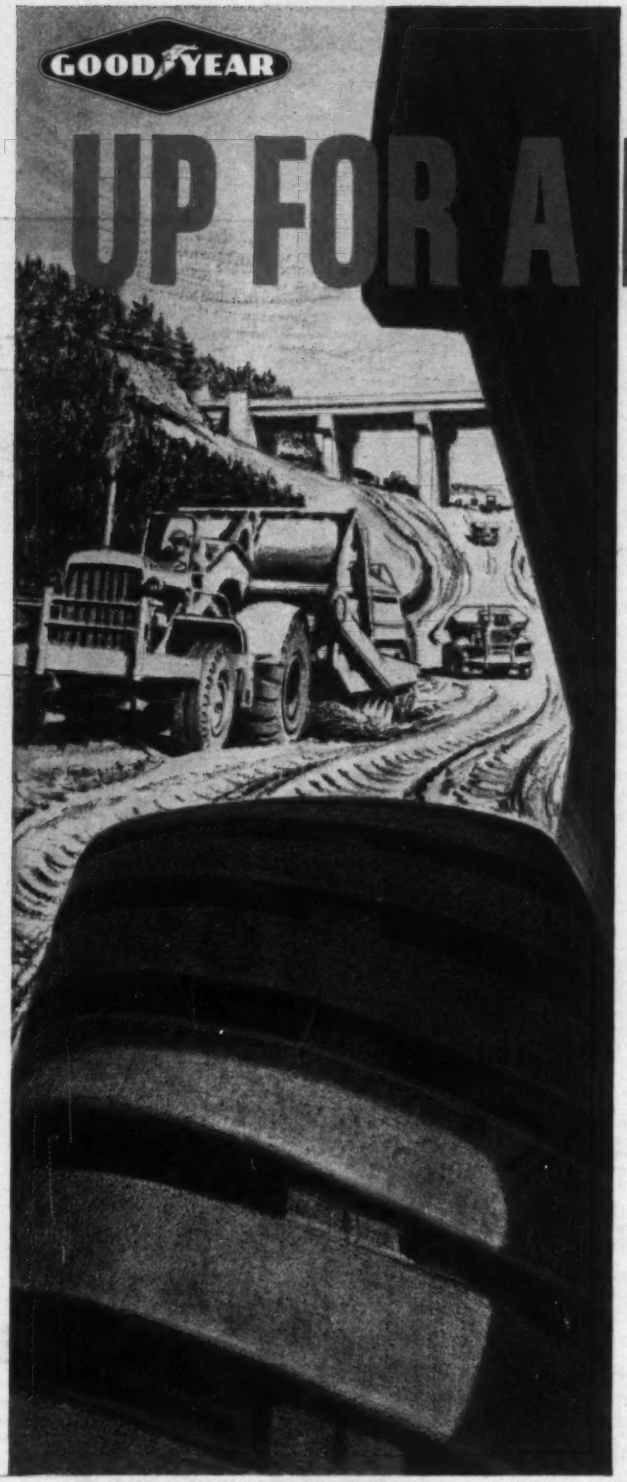

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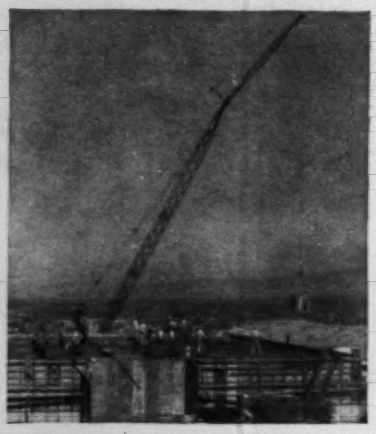

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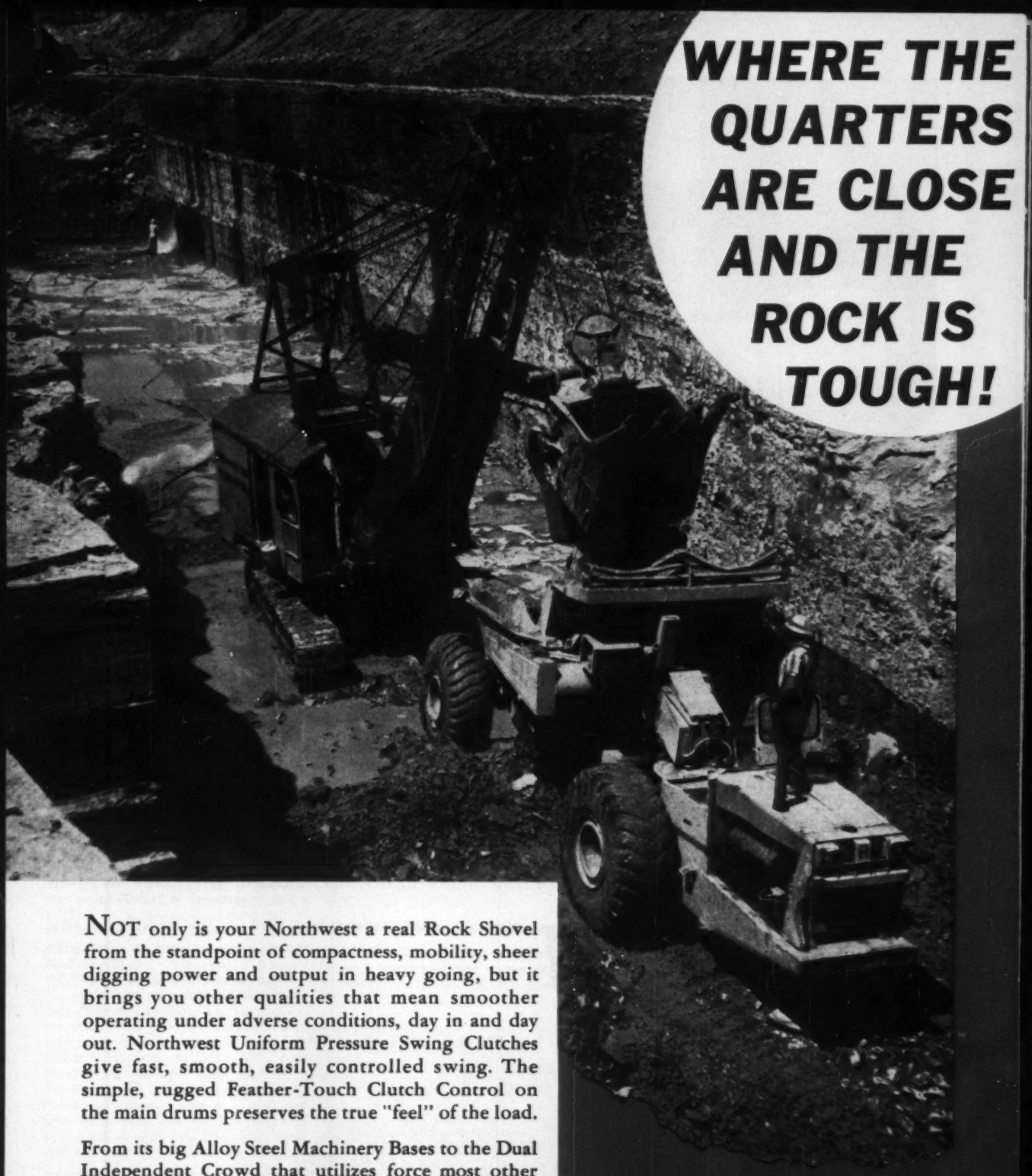

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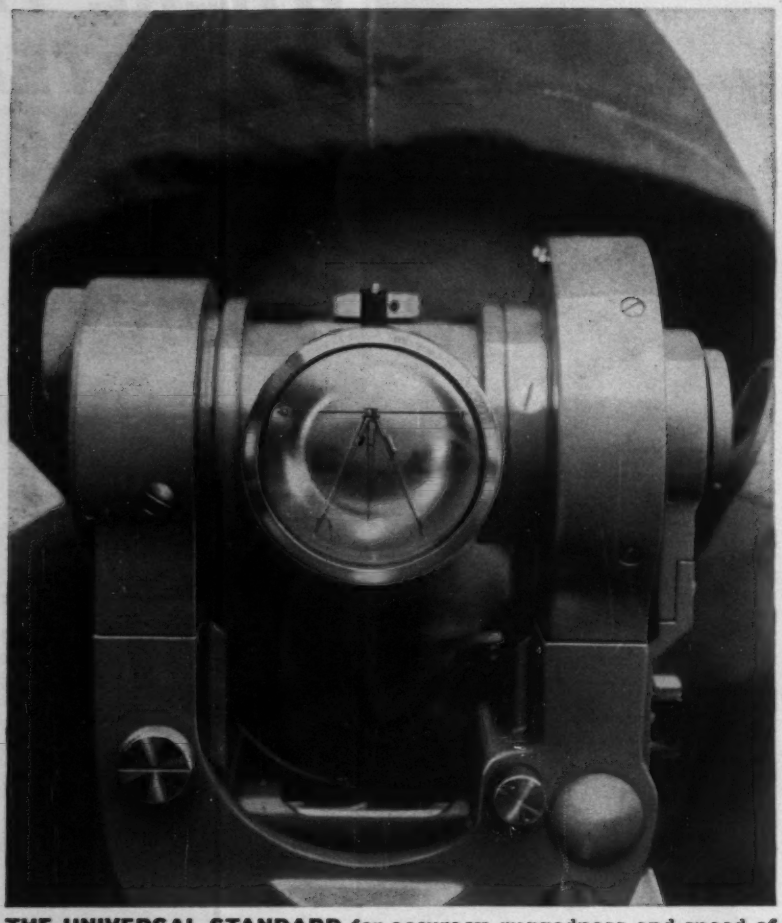

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Reader Comment

Mulch Confusion

SIR—You published (ENR Feb. 23, p. 53) a badly distorted article pertaining to a Polymer Mulch.

As the landscape engineer for the Garden State Parkway, I devised this experimental program in collaboration with the Alco Chemical Company. All construction work was done by Parkway personnel under my direction. To begin, the Parkway does not own a rig as shown in the photograph, which, incidentally, is applying a straw mulch in contradiction to the article.

This liquid mulch was applied with a Finn hydro-seeder containing 100 gal of Vulcanol per 1,000 gal of water per acre with the application time at approximately 15 to 30 minutes.

After the emulsion is applied, there is no need or intention to water or irrigate the area.

L. DEMONT
Red Bank, N. J.

Collapse Lesson

SIR—I feel there is a real lesson to be learned by architects and owners in the recent collapse of the prestressed, precast concrete building at Harrisonburg, (ENR Dec. 1, 1960, p. 30, Dec. 15, p. 28).

There appears to be a "two-fold standard" in building design today—a standard which requires structural steel to be designed in accordance with AISC specifications, while permitting prestressed concrete structures to be built without adherence to any comparable specification criteria.

The structural drawings showed beam-to-column connection details specified 1½-in. minimum bearing with a 2-in. maximum. A 2x2x$\frac{5}{16}$ angle cast in the beam bottom bears on a 1½x1½x$\frac{5}{16}$ seat angle cast in the concrete column. The investigators calculated a uniform bearing stress of 3,460 psi at the bearing seat under dead load of the beam and its double-tee roof slab.

Compare this construction with that which would have been a minimum requirement for end bearing of a steel joist. The AISC specification for Open Web Steel Joists requires "the ends of the joists shall extend a distance of not less than 6 in. over masonry or poured concrete and not less than 4 in. over steel supports"; also, "the bearing area shall be proportioned so that the unit

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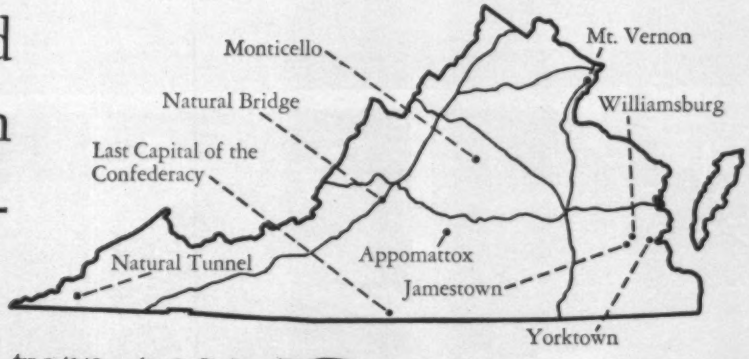
In 1961, more than 1,000,000 tourists will visit some of the Nation's oldest landmarks in Virginia. And they'll travel on some of the Nation's newest highways because Virginia is spending about $76,000,000 in Federal aid funds on its Interstate Highway program. This, in addition to two bond issue projects: the Richmond-Petersburg Turnpike and the Hampton Roads Bridge-Tunnel. For more details, turn page.



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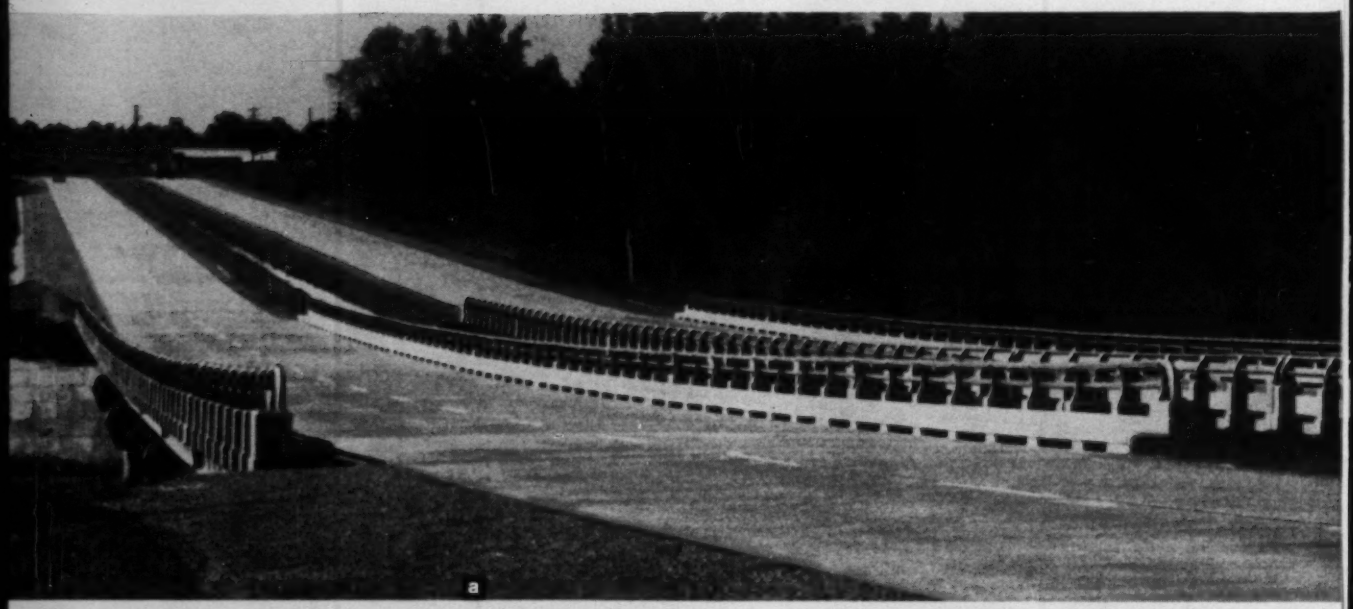

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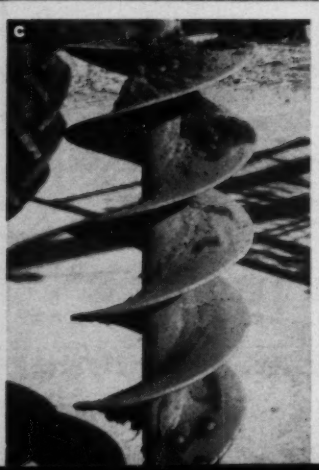

c

d

USS Highway Beam Guardrail provides safety protection at critical points along the roadway. Steel is also used for driving aids, markers and lighting standards. The *strength* of the Virginia Interstate Highway Program is *steel.*

a The design of each bridge is based on the strength of steel. Bridge railings, reinforcing bars and structural members are all made from steel. **b** Highway guard rail. USS AMERICAN Highway Beam Guardrail has been accepted by most state highway departments because of its extra strength, high visibility and attractive styling. **c** Giant steel auger drills through toughest terrain in all seasons. USS High Strength Steels have the toughness and impact resistance it takes for heavy construction equipment. Steel is so versatile it is used in all types of construction equipment for lightweight and heavy duty applications. **d** Road embankments are saved from costly erosion with steel culverts fabricated from corrugated galvanized USS Culvert Sheets. Culvert sheets assemble easily and first cost is low. They make an ideal economical and strong waterway channel. **e** Steel H-piles are driven to provide solid foundations for bridge piers and abutments. Cranes equipped with USS TIGER BRAND Wire Rope handle more work with less down time. USS TIGER BRAND—America's No. 1 Wire Rope always gives top performance under the most severe conditions. **f** Bridge railings, reinforcing bars and structural members are all made from steel. **g** Steel gives strength to bridges and provides safety protection when it's formed into guardrails. **h** Strong roadways are made with reinforced concrete. USS AMERICAN Welded Wire Fabric has a minimum tensile strength of 75,000 psi and a minimum yield point of 60,000 psi, available in a wide range of styles and sizes. USS DI-LOK Concrete reinforcing bars for pavements, bridge floor slabs, footings and abutments are supplied bent to specification. Highways are built faster and more economically with USS pre-engineered products.

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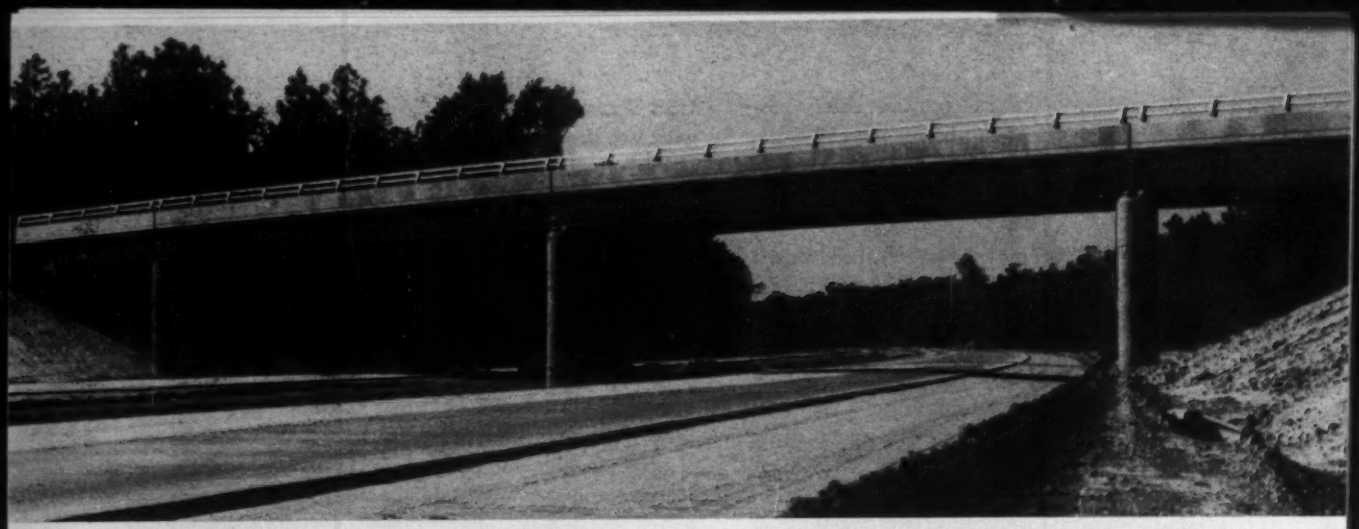

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. . . Reader Comment

bearing pressure does not exceed 600 psi (on poured concrete)."

Thus, we see, main structural members in the prestressed design were permitted to bear only 1½ in., 37½% of the AISC requirement for steel on steel, and 25% of the AISC requirement for steel on concrete for a single joist. Assuming bearing pressure to have been uniform, the bearing pressures at these connections in the prestressed concrete frame were 47% in excess of the AISC limitations. Based on the ACI Building Code allowable bearing stress of 1,250 psi for edge loads on 5,000 psi concrete, this design was still underdesigned by 177%.

Until engineering responsibility and specification control become more firmly established in the field of prestressed concrete design, it behooves architects and owners to examine carefully every aspect of those designs before proceeding with construction. There can only be one standard of responsibility for the safety of the public.

LEWIS MACDONALD
Vierling Steel Works
Chicago, Ill.

Editor's Note—The situation was somewhat different from what Mr. MacDonald assumes. The building site, which was several miles outside Harrisonburg, Va., did not come under the jurisdiction of any building code—municipal or state. Thus the designer was not bound by the provisions of any specification, whether the building was designed in steel or concrete.

For Your Calendar . . .

American Society of Civil Engineers, Phoenix convention, Hotel Westward Ho, Phoenix, Ariz., April 10-14. Write: William H. Wisely, Exec. Sec., 33 W. 39th St., N. Y. 18, N. Y.

American Institute of Architects, annual convention, Philadelphia, Pa., April 24-28. Write: The American Institute of Architects, 1735 New York Ave., Washington 6, D. C.

American Society of Planning Officials, national planning conference, Denver Hilton Hotel, Denver, Colo., April 30-May 4. Write: ASPO, 1313 E. 60th St., Chicago 37, Ill.

National Building Material Distributors Association, annual spring convention, Biltmore Hotel, New York City, May 1-3. Write: S. M. Van Kirk, 22 W. Monroe St., Chicago 3, Ill.

American Institute of Steel Construction, annual national engineering conference, Hotel Leamington, Minneapolis, Minn., May 11-12. Write: AISC, 101 Park Ave., N. Y. 17, N. Y.

Building Research Institute, spring conference, Shoreham Hotel, Washington, D. C., May 16-18. Write: Building Research Institute, 2101 Constitution Ave., Washington 25, D. C.

American Society of Mechanical Engineers, design engineering conference and show, Cobo Hall, Detroit, Mich., May 22-25. Write: ASME Meetings Dept., 29 W. 39th St., N. Y. 18, N. Y.

American Society for Testing Materials, annual meeting, Chalfont-Haddon Hall, Atlantic City, N. J., June 25-30. Write: ASTM, 1916 Race St., Philadelphia 3, Pa.

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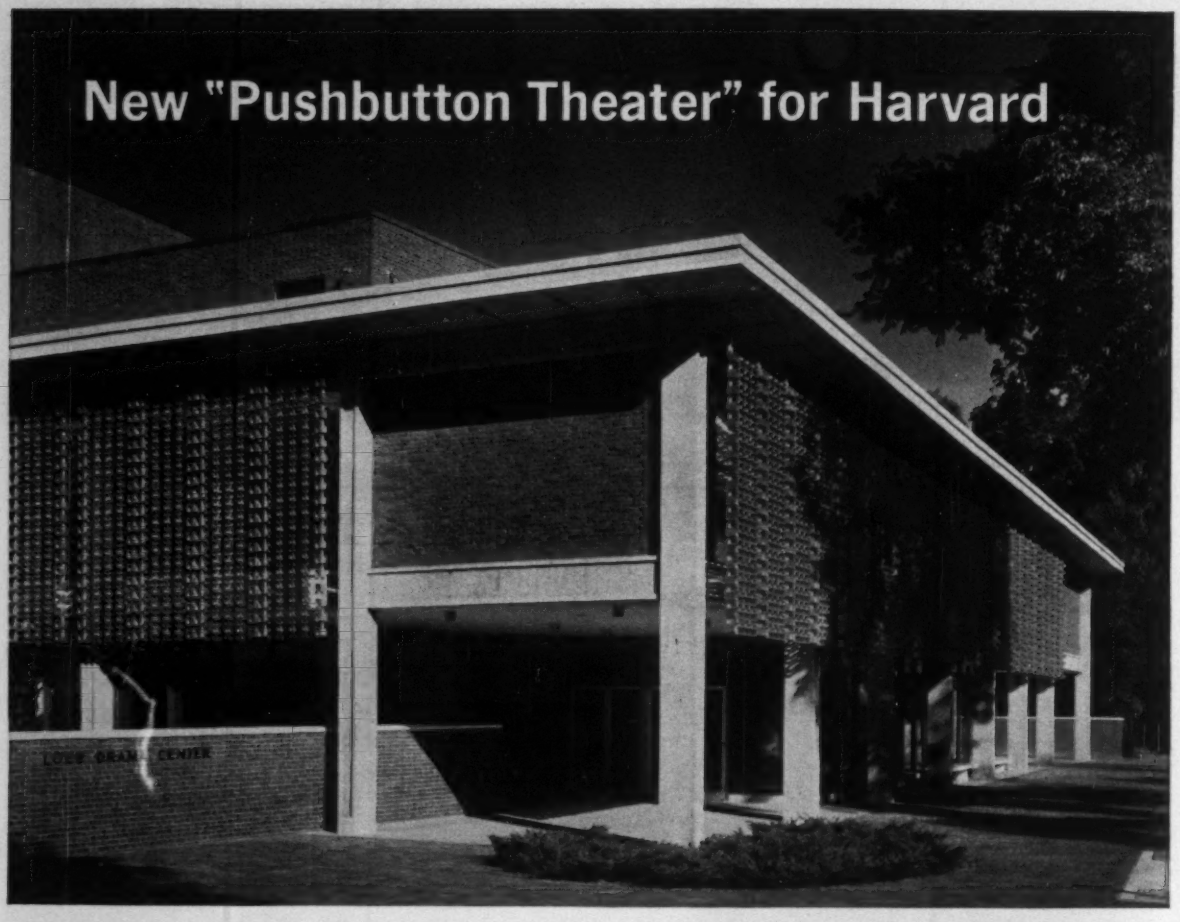

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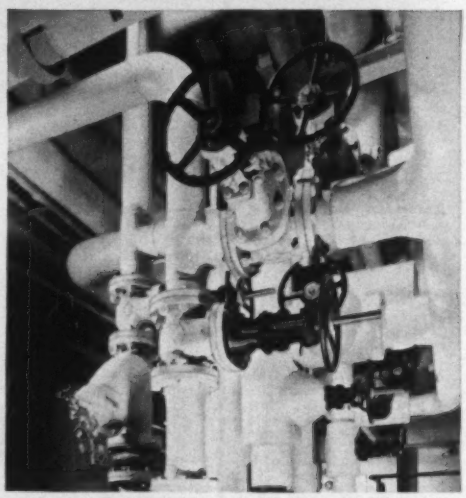

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

HAYSTACK IN THE WIND—More industrial plants were proposed this month than in January and February combined. The trend, which has been upward for four months, thus takes on a full head of steam. Proposals usually take six to nine months to clear the planning stage, so come June or July you can expect the start of a big spurt in industrial construction contracts.

THE GOLDEN MEAN—Because he blames the low bid system for the high incidence of bankruptcy in construction and for inferior workmanship, Roger H. Corbetta, president of Corbetta Construction Co. of New York City, suggests switching to a bid system used in Italy. The Italians drop the high and low bids, average the remainder and award the job to the contractor whose bid comes closest to the average figure.

HOW TO—The owner-builder of a 29-story office building in New York has made up a 16-page "Sidewalk Superintendents' Handbook on Foundation Techniques." He hopes that people informed on what's going on down below might want to rent some floor space up above.

BIGGEST GENERATOR GETS BIGGER—The Tennessee Valley Authority has upped the already unprecedented capacity specified for its next generating unit from 800,000 kw to 900,000 kw. The agency announced the change last week and also disclosed plans to build a powerhouse for the new steam unit on the Clinch River about seven miles from Oak Ridge. Total cost will be $125 million. General Electric has the generator contract and also gave TVA an option to buy a second one.

IN? OUT? IN?—Is the appointment of Lawrence D. Wilson as chief engineer of the New Mexico State Highway Commission legal? The state attorney general says it's "questionable" because Mr. Wilson, who is now deputy commissioner of the Alaska Division of Highways, doesn't meet New Mexico's residence requirements. But what makes the situation complex is that Mr. Wilson has already served a term as chief highway engineer in New Mexico—he left New Mexico for Alaska in '59.

A-POWER PROSPECTS—Nuclear power will account for 4% of total U. S. generating capacity by 1965, 10% by 1970 and 25% by 1980. That's the consensus of some 40 utilities, manufacturers and national laboratories polled by Titus G. Le Clair of General Dynamics. Among the reasons for the growth: Nuclear fuels are getting cheaper while fossil fuels go up; and thermal efficiency of nuclear plants is going to rise faster.

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GRIFFIN **Solves Another Dewatering Problem!** Two areas, 500' apart, at the Trenton Sewage Treatment Plant, Trenton, N. J., were dewatered in record time using a GRIFFIN Wellpoint System with a **single** pump station.

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WASHINGTON OBSERVER

- **Road financing—after the Easter recess**
- **Help for mass transit coming?**
- **Housing for elderly pushed**

- **It will be at least mid-April before the House Ways and Means Committee votes on President Kennedy's highway financing proposals.** This will give members a chance to test the sentiment at home during the Easter recess before holding a series of closed meetings. Members, meanwhile, are studying additional data from the Bureau of Public Roads designed to support use of preliminary reports from AASHO road tests in demanding higher taxes on heavy trucks.

  Other congressional committees are doing the necessary spadework on new highway legislation. A House public works subcommittee has completed hearings on a bill by Rep. George H. Fallon (D., Md.) that would approve the new $41-billion estimate on Interstate costs.

  This approval is necessary before apportionment of federal-aid funds for fiscal 1963 can be made this summer. The Fallon measure provides for an $11.7-billion increase in Interstate apportionments from 1963 through 1971. Actual allocation of these funds depends, of course, on approval of Mr. Kennedy's financing program, or something like it.

—

- **Prospects are good that Congress will enact a program of federal aid to help rescue mass transportation** systems from deterioration. A Senate subcommittee has completed hearings on a bill to create a low-interest, long-term revolving loan fund of $250 million with which transit systems could buy new equipment and facilities. Included is a $75-million matching grant program for research and planning.

  Commuter railroads and city bus lines probably would be the first beneficiaries. The bill, sponsored by Sen. Harrison A. Williams (D., N. J.) and 18 other Senators, is an expanded version of a measure that cleared the Senate last year but stalled in the House. Interest shown by the Kennedy Administration is expected to push this bill, or something similar, through Congress this year.

—

- **The Kennedy Administration plans to pay more attention to housing for the elderly.** Federal Housing Administrator Robert C. Weaver made this clear in his first major address since taking office—before the Institute for Producing Housing for the Elderly in New York.

  Mr. Weaver plans to consolidate programs now run by FHA and the Public Housing Administration. Toward that end, he will appoint an expert in the field within the next 30 days to help him establish a policy that would be binding on both agencies.

  In his recent housing message, President Kennedy asked for $100 million for direct loans to aid the elderly build homes. The President also requested that half of his proposed 100,000 public housing units be earmarked for the elderly.

—

- **An order to lower by 10 ft legal navigation clearance for Mississippi River bridges has been rescinded by the Corps of Engineers.** The order (ENR Feb. 16, p. 17) was withdrawn after Rep. Frank Smith (D., Miss.) introduced a bill to fix clearances at old heights of 55 ft above high water pools and 63 ft above normal pools.

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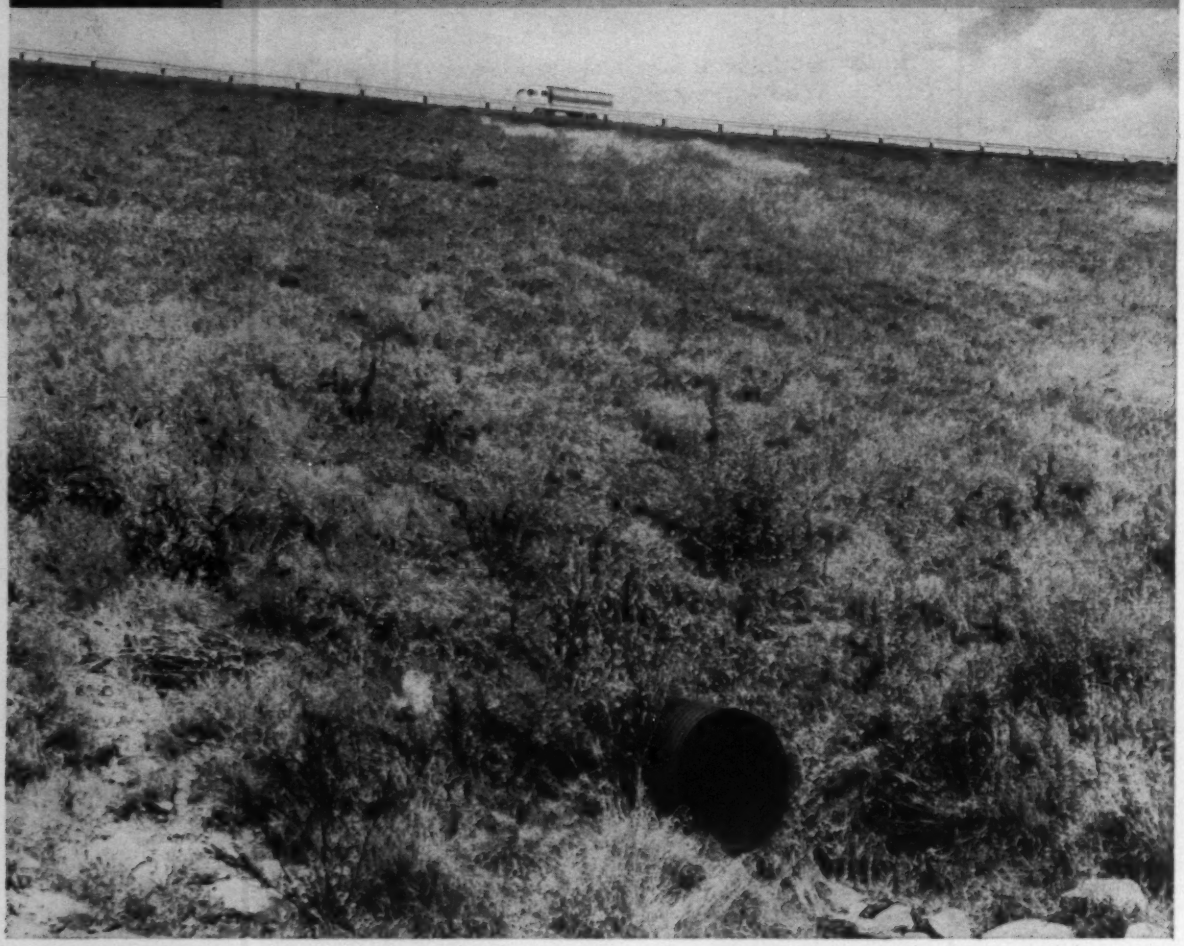

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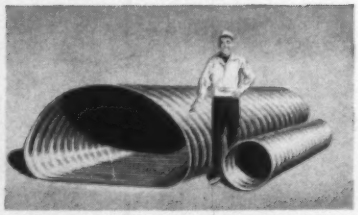

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JFK Beefs Up the Budget Piecemeal

- **For the Corps of Engineers: 19 new starts are added to the list of 27 submitted by President Eisenhower in January.**
- **For the Bureau of Reclamation: Ike's figure of $290.3 million stands, but the money is redistributed somewhat.**
- **For housing and schools: More construction money, no doubt. But the amount depends on what Congress does with its legislation.**

President Kennedy intends to spend more on construction than the Eisenhower Administration had in mind when it presented its fiscal '62 budget to Congress in January. The question is how much more.

President Kennedy couched his budget message to Congress last week in general terms, leaving specifics for Budget Director David E. Bell to spell out in coming committee hearings. Meanwhile the Administration is amending Eisenhower's $7.8-billion budget document piecemeal.

But the spending programs Mr. Kennedy has already outlined in a number of areas would commit the government to large and expanding construction programs over the years and add hundreds of millions to next year's spending. You can expect larger programs in housing, highways, school construction and Corps of Engineers civil works projects. There will be no change in the money going to the Bureau of Reclamation, but there will be some shift in projects.

The Eisenhower budget called for $6.3 billion for civil public works projects of all kinds in '62, compared to $5.8 billion expected to have been spent by the end of fiscal '61. (The new fiscal year begins July 1.) President Eisenhower also budgeted $1.3 billion for military construction in fiscal '62, the same as for fiscal '61.

President Kennedy made two decisions on defense that affect construction. He ordered a step up in development and production of the Minuteman solid-fueled intercontinental ballistic missile, and cancellation of launching silos for two squadrons of the Titan II liquid-fueled ICBM.

Here is what Kennedy proposes: Deferring of development of mobile rail delivery of three Minuteman squadrons, and instead replacing them with three fixed-based squadrons. Mr. Kennedy says this would increase the total number of missiles added by two-thirds. He would also eliminate the last two squadrons of Titans originally contemplated.

Here is how the Kennedy budget is shaping up in major construction areas:

I. Army Engineers

Mr. Kennedy is adding 19 new construction starts to the Army's navigation and flood-control projects. While they add only $10 million to next year's spending, they would cost some $205 million to complete. These are in addition to the 27 new Engineer construction starts and 10 new reclamation starts asked by President Eisenhower in his January message—which would cost $340 million to complete.

Largest single project asked by Mr. Kennedy is the widening and deepening of the Chesapeake and Delaware Canal from its present 250-ft width and 27-ft depth to a 450-ft width and 35-ft depth. Total cost is estimated at $99 million.

In addition to new construction starts, Mr. Kennedy asks $1.63 million for 19 new planning starts. Among the projects that would be affected: Claiborne Lock and Dam, Alabama; flood control, Stamford, Conn; Cross Florida Barge Canal; Melvern Reservoir, Kansas; Grayson Reservoir, Kentucky; Cayuga inlet flood control, Ithaca, N. Y.; Fairport Harbor Improvement, Ohio; Racine Locks and Dam, Ohio; Short Mountain Lock and Dam, Oklahoma; and Ft. Worth Floodway extension, Texas.

Mr. Kennedy has cut Eisenhower spending recommendations on four projects: Bridgeport Harbor, cut from $2.5 million to $1.3 million; Hall Meadow Brook Reservoir, Conn., cut from $1.4 million to $1.2 million; Meldahl Locks and Dam, Kentucky and Ohio, cut to $17.5 million.

On the spending side, Mr. Kennedy is asking an increase of $1.2 million to step up 47 surveys; $1.3-million increase in seven planning projects; $9.2 million to speed up four construction projects (Arkansas River bank stabilization, Arkansas and Oklahoma; New Hogan Reservoir, California; Fishtrap Reservoir, Kentucky; and Maxwell Locks and Dam, Pennsylvania).

II. Reclamation and Power

Mr. Kennedy's revised budget asks a $100-million hike for the Rural Electrification Administration above the Eisenhower request. This makes a total new request of $195 million for the electric loan program.

Mr. Kennedy is also asking a rise of $2.5 million above Mr. Eisenhower's request of $15.7 million for the Bonneville Power Administration. This would be for five transmission lines, costing eventually $32.4 million.

The Kennedy budget request doesn't call for more money over-all for the Bureau of Reclamation—Eisenhower's $290.3-million figure still stands. Mr. Kennedy, however, said that under his "re-programming" the department would be enabled to complete "a number" of investigations—probably including the huge Alaskan Rampart Dam project and Libby Dam, Mont.

Also, funds are being juggled to provide for new starts, including construction of federal transmission lines for the Upper Colorado project and new lines within the Central Valley Project, California.

III. Schools, Housing

At least two of Kennedy's construction programs are contingent upon congressional approval—schools and housing.

He has budgeted a total of $500 million for school-aid spending. If any bill gets through at all this session, it may be limited to construction (as

against payment of salaries). However, with both the segregation and the parochial-school issues harassing the legislators, it's difficult now to guess what kind of law and how large a program has a chance of passage this year.

Mr. Kennedy's housing plans are likewise sweeping. They are bound to be controversial, particularly on the issue of segregation or "open occupancy."

Mr. Kennedy's program would boost urban renewal, public housing, cooperative housing, private housing, community facilities, college housing, housing for the elderly—just about every program on the books.

All told, it's a multibillion-dollar program of grants, loans, mortgage insurance and subsidies. For urban renewal alone, Mr. Kennedy asks Congress for a $2.5-billion authorization over a four-year period.

All this shows up in a relatively modest way translated into budget expenditures—that is, actual cost to the taxpayer.

President Kennedy's plan would add $214 million to fiscal 1962 spending of the Housing and Home Finance Agency, including $45 million for college housing, $65 million for low-cost housing, $54 million for urban renewal, $30 million for community facilities, $10 million for housing for the elderly.

Builders predict construction boom as . . .

St. Louis Modernizes Building Code

A new building code adopted by St. Louis could spark a construction boom in that city.

Scheduled for contract awards within the next three weeks are two high-rise buildings in the $250-million Mill Creek Valley project. These buildings will have metal-panel curtain walls, which would have required masonry backup under the provisions of the old code.

These buildings were among $300 million worth of redevelopment projects delayed pending enactment of the new code. According to Arthur E. Wright, Jr. director of Downtown St. Louis, Inc., some of the proposed projects would have been abandoned if the new code had not been approved.

Six redevelopers directing these projects stressed the economy of modern materials prohibited by the old code. They urged approval of the modernized code at a public hearing.

The new performance-type code, based on the Basic Building Code of the Building Officials Conference of America, sets standards for materials, but allows considerable freedom in their choice. The old code, a specification type, restricted designers to traditional materials.

The new code's most controversial provision concerned the approval of metal-panel walls. The local bricklayers' union wanted a four-hour fire resistance rating specified for walls in multistory buildings instead of the two-hour rating approved.

In 1954, under a threat by an industrialist to build a proposed plant outside the city, the Board of Aldermen amended the old code to permit metal-panel walls in buildings of 100,000 sq ft or more floor area. The new code eliminates this inconsistency.

Shortly after the passage of the amendment authorizing limited use of panel walls, a committee headed by Neal J. Campbell, consulting engineer, began the study that culminated in the new code.

Electricians and plumbers also opposed some changes in the new code. The electricians objects to the flexible, nonmetallic conduit permitted by the new code.

Federal redevelopment projects that will benefit from the code revision, in addition to Mill Creek Valley, include: Jefferson National Expansion Memorial on the Mississippi water front, $30 million; 220-acre Kosciusko project in South St. Louis; 920-acre Tandy project in North St. Louis; 1,285-acre Murphy area project.

Private development includes an $80-million stadium for the St. Louis Cardinals and a $40-million apartment project, Mansion House.

Timber Trusses Go Up in Pairs

Erection of 200-ft timber bowstrings, awkward if done one at a time, is easier in pairs. An 11-man crew took only six working days to assemble and erect 16 pairs of trusses framing the roof of the 124,000-sq-ft Rilco laminated wood products plant at Cottage Grove, Ore.

The trusses were fabricated at another Rilco plant in Albert Lea, Minn., and shipped to the site in full-span, 200-ft lengths. Top and bottom chords are laminated; diagonal web members are connected to the chords through bolted gusset plates.

At the site, workmen assembled the trusses on the ground. Longitudinal X-bracing, rafters and sheathing made each pair into a stable erection unit. Two truck cranes, one on each side of the building, lifted the sections atop 20-ft laminated columns.

Rafters and sheathing in the 20-ft bays between each pair of trusses had to be installed after erection. Completion of more than half the roof decking on the ground increased the safety and efficiency of the operation.

Wall panels, with longitudinal bracing built into them, were also assembled on the ground. The 62 panels measured about 20 ft sq.

The new plant was built by and for the Rilco Engineered Wood Products Division of the Weyerhaeuser Co. Chief products will be laminated arches, trusses and beams.

Tunneling an underground command post . . .

The Technique Is Up to the Bidder

The contractor with the most ingenuity will probably win the big undermountain construction job that the Air Force is letting out for bids this week. The job: Phase 1 construction of a cavernous headquarters for the North American Air Defense Command (Norad) deep inside of Cheyenne Mountain. This work is estimated at about $7.5 million.

The specifications give the bidders almost a free hand in choosing tunneling techniques. Therefore the Corps of Engineers, which will supervise construction, is expecting some unconventional proposals when it opens bids on April 25. Among the possible methods:

- A Swedish technique of punching a man-sized hole and enlarging it with successive rows of drilled holes 100 ft long.
- A smooth explosion technique developed in Canada.

Virtually the only set restriction in the specs is dimensional tolerance.

Total cost of the Cheyenne Mountain Combat Operations Center, including the cost of equipment installed by Norad, is estimated at $60 million to $65 million.

Phase 1 comprises repair of a previously built access road and excavation for tunnels and big interior chambers. Phase 2 will cover the interior structure and the outside utility systems.

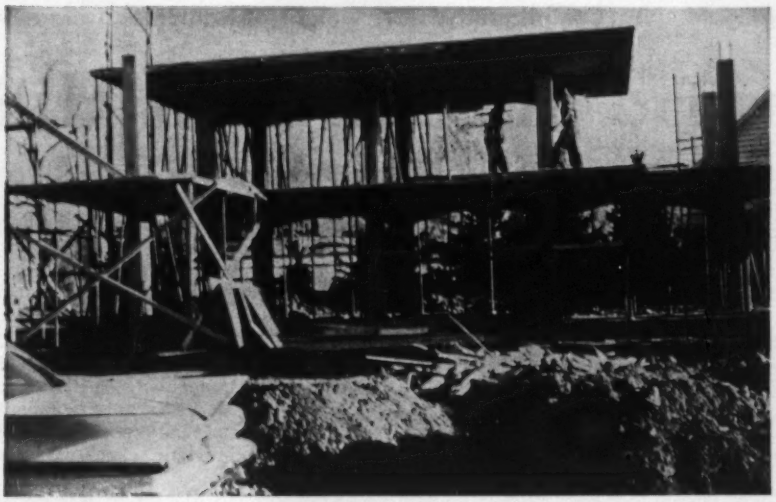
Access road to the project site is the "Million-Dollar Road to Nowhere" (ENR Dec. 17, 1959, p. 46). Its repairs will include restoration of a segment destroyed by a rockslide and rock clearance since its completion over a year ago. This must be finished before construction on the underground headquarters can begin.

The access tunnels will form a horseshoe shape in plan, nearly one mile in total length. The three main chambers will each measure about 320 ft long. In cross section they will be 45 ft wide by 56 ft high, the maximum size allowed by the threat of collapse of the granite cavern walls. The cavern roofs will be supported with rock bolts anchoring chain-link fabric.

The north and south access tunnels (the legs of the horseshoe) will be lined for about 300 ft in from the point of entry into the mountain. This is the area of frost zone and bad rock. Rock faults will be reinforced with steel ribs covered with pneumatically sprayed concrete. Blast doors will protect the tunnel entrances.

The main chambers will enclose four-level structures housing the command operations' equipment. Framing will probably be structural steel, with insulated metal wall panels.

Architects-engineers are a joint venture of Parsons, Brinkerhoff, Quade & Douglas of New York City and A. J. Ryan & Associates of Denver.



H-P's Form Building Floor, Roof

Concrete umbrella slabs framing a two-story apartment building in West Seneca, N. Y., have added a new dimension to hyperbolic-paraboloid construction.

The cast-in-place umbrella slabs, 12 ft square in plan, cantilever from 10 reinforced concrete columns spaced 12 ft c-c. Flat-topped, they taper from a maximum 19-in. thickness at the columns to 2½ in. at the periphery. Construction joints between them are keyed and doweled.

Concrete strength is 4,000 psi; two-way reinforcing consisting of No. 3 and No. 4 bars is spaced at 6 in. c-c.

Carpenters laminated the plywood forms on the site, warping them to fit the hyperbolic-paraboloid surface. A two-way pattern of 1x3s, supported on the column form and on shores placed around the periphery, stiffens each form.

Erection of the masonry walls followed completion of all the h-p slabs.

The $50,000 cost for the four-unit apartment building is close to that for any type of fireproof structure, according to the contractor, E. J. Fuhrmann & Co., Inc. Moreover, the unusual building design brings premium rents.

Architect-engineers were Pfohl, Stoll & Roberts of Buffalo.

Florida Road Board Bars Jacksonville Contractor

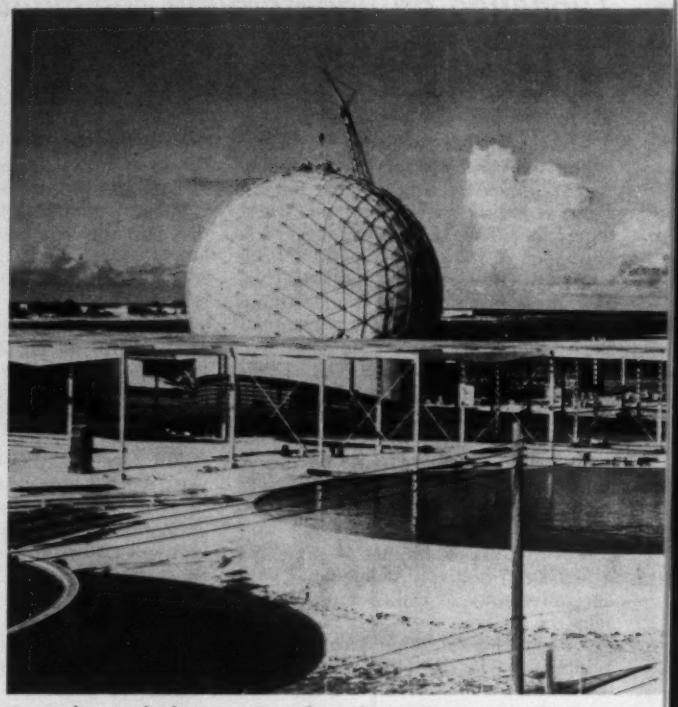
The Florida State Road Board has suspended Duval Engineering & Contracting Co. of Jacksonville from further bidding on state highway projects, pending a review of alleged fraudulent conduct on the part of company supervisors. At the same time, the state's Legislative Interim Roads Committee started hearings in Jacksonville on road-building projects in which Duval and other companies have been involved.

Road Board Chairman John H. Phillips announced that a preliminary study of Duval operations "leads to the conclusion that the state has been deliberately defrauded by supervisory employees of this firm." Two supervisory employees of Duval were recently convicted of conspiring to defraud the federal government in making short-weight deliveries of asphaltic concrete to the Mayport Naval Air Station.

Mr. Phillips said the Road Department's investigation so far "would clearly indicate that this short-loading practice was systematic, deliberate and intentional on state jobs over a period of several years."

The State Road Department said Duval is currently working on four highway projects in the Jacksonville area; the company will be allowed to complete these contracts, which total about $828,000. The company also has low bids on five projects totaling about $1.3 million, on which new bids probably will be taken.

Kwajalein coral is blasted for aggregate.



Complicated dome, weight of equipment offered mos

Fence will shape radar waves.

If Nike Zeus Hits,

By Lauress L. Wise

A simulated explosion in space over the South Pacific late this year may well set off the biggest continental defense construction program the U. S. has ever known.

An Air Force missile team at Vandenberg Air Force Base, Calif., will fire an Atlas ICBM in the general direction of Kwajalein Island, 4,200 miles to the Southwest.

Minutes later a team of Army scientists and technicians on Kwajalein Island will try to track the 15,000-mph missile by radar and shoot it down with the Army's anti-missile missile, the Nike Zeus.

The Nike Zeus is the only defense weapon against intercontinental ballistic missiles the U. S. has under way. If the Army can knock the Air Force Atlas out of the sky, the Nike Zeus probably will become an important part of the U. S. defense system.

The Army is spending $40 million for brick-and-mortar work to build detection and firing installations on Kwajalein to test the Nike Zeus. This $40-million expenditure could be multiplied by dozens—possibly by hundreds—to build anti-missile missile bases around the U. S.

The Nike Zeus will go through preliminary tests this year against small missiles fired from nearby Roi-Namur Island.

The Army has 18 Atlas ICBMs stockpiled at Vandenberg AFB for the critical late '61 tests. Costing about $1.5 million apiece, these Atlases will be the world's most expensive clay pigeons.

Army officials and firms developing the Nike Zeus have no doubts about the missile's ability to intercept an enemy warhead. Critics of the program attack its great cost. And they doubt the missile can discriminate between a true warhead and a possible enemy decoy.

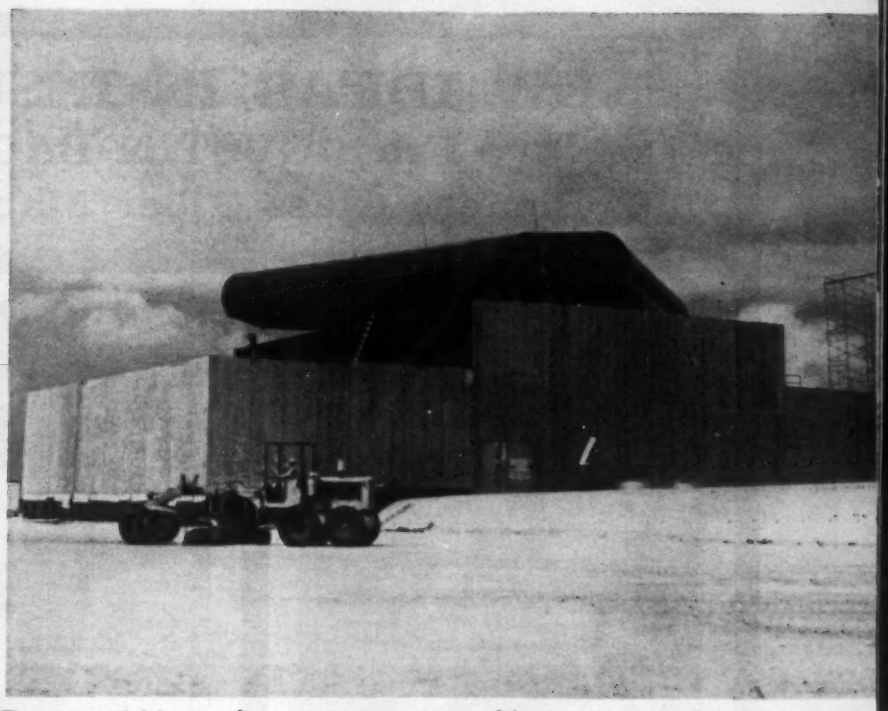
To search out and track down in a few minutes an enemy ICBM traveling 15,000 mph, the Nike Zeus system includes extremely powerful and sensitive radars and complex and swift computers.

The Kwajalein installation includes an acquisition radar, target track radars, discrimination radars and missile track radars.

The acquisition radar, the most powerful system of its kind ever developed,

West Coast Editor Larry Wise flew to Kwajalein last week with representatives of other national news media to inspect the progress of Nike Zeus construction.

construction difficulties.



Zeus acquisition radar transmitter is world's most powerful.

Base Construction Scores

scans space for a target, an enemy ICBM.

When the acquisition radar finds a target, it relays the information through its extensive computer system to the target track radar and the discrimination radar.

The discrimination radar, the utmost in top-secret work on Kwajalein, is supposed to decide whether the oncoming target is an ICBM with an atomic warhead, a decoy missile, a flock of migrating birds or a meteorite. The target track radar locks onto the target and follows its flight until the Nike Zeus destroys it.

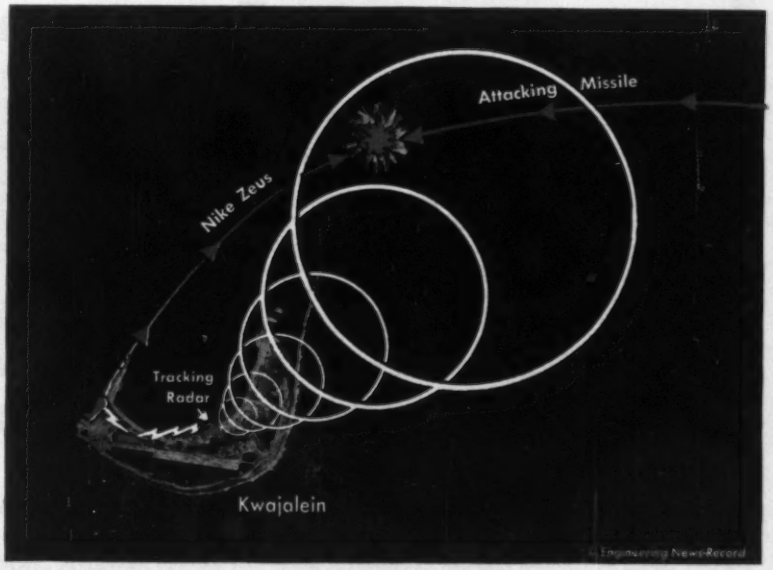
Another radar, the missile track radar, follows the Nike Zeus and supplies it with guidance information that will enable the Nike Zeus to intercept the target missile.

A tactical Nike Zeus base probably would have several target track, discrimination and missile track radars for each acquisition radar, the most complex of all the radar units and the most difficult to build.

Two units make up the acquisition radar, the transmitter and the receiver. The transmitter antenna looks like a huge wedge of Camembert cheese. Triangular, 80 ft per side, and weighing 90 tons it rotates on top of a three-story transmitter building. A bearing including 114 steel balls of 3-in. dia supports the antenna.

A 65-ft fence of structural steel with stainless steel fabric partly encircles the transmitter at a 340-ft radius. Primary purpose of the fence is to shape the radar waves. The steel fence also serves as a personnel barrier, because the powerful radio waves could readily kill anyone who wanders too close to the source.

(*Please turn the page*)



MISSILE VS MISSILE—Huge radar constant searching space spots invading ICBM and signals to radar control system, which fires and directs Nike Zeus to the kill.

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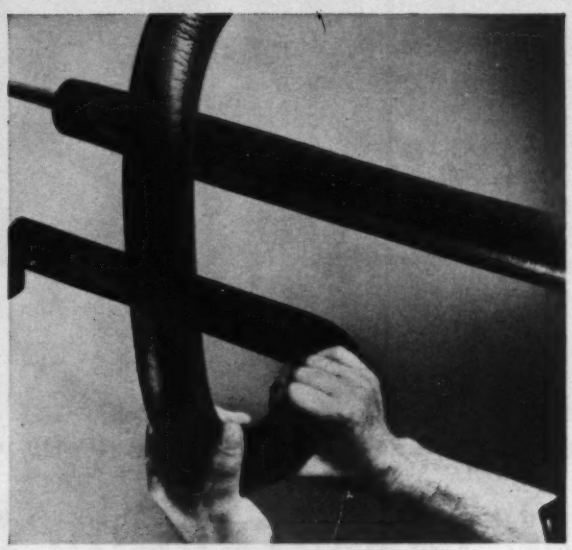

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Transmitter crews enter the building from outside the fence through a ground level tunnel of corrugated steel.

The acquisition radar receiver is the most interesting structure on Kwajalein. The actual receiver is a 98-ft-dia hemisphere made up of 34,484 cubes of plastic foam. The 2-ft cubes have varying amounts of metal in them to provide required indexes of refraction to concentrate the receiving radar waves. A heavy structural steel framework supports the cubes. As a result, the rotating part of the receiver weighs 1,400 tons. This huge weight is supported by a hydraulic bearing greater than any ever heretofore attempted.

A concrete cylinder, 35 ft in dia and 2 ft thick, supports the receiver dome. Because it extends 25 ft below ground level, builders had to use a wellpoint system during construction.

A 32-ft-high structural steel framework, which resembles an open-sided warehouse, surrounds the receiver. Stainless steel mesh covers the flat top of the framework. Called a ground plane, this structure reflects radar waves into the radar dome. Specifications called for an extreme degree of precision, with tolerances to 0.003 in.

Nike Zeus missiles on operational bases in the U. S. would be housed in underground silos for protection against aggressor ICBMs. These silos would be simpler and smaller than those that house the Atlas, Titan and Minuteman missiles. The Nike Zeus is only 47 ft long and weighs 2,200 lb, as compared with the 80-ft, 130-ton Atlas and the 90-ft, 110-ton Titan.

But at Kwajalein the four Nike Zeus silos are above ground with earth mounded around them, because of a difficult groundwater problem.

About 25% of the $40-million Kwajalein construction cost goes for nontechnical items. This includes a headquarters building, a school, bachelor officers' quarters, additional water supply, the Navy radio system and rehabilitation work.

A joint venture is building the Kwajalein facilities for the Honolulu District Corps of Engineers: Pacific Construction Co., Honolulu; Read & Martin, Inc., Fairbanks, Alaska, and H. B. Zachery Co., San Antonio, Tex.

Col. John R. Clifton is District Engineer for the Army.

All Pacific area space and missile facilities are part of the Pacific Missile Range, an inter-service and inter-agency command administered by the Navy with Rear Adm. J. P. Monroe, U. S. N., commanding.

The Army Rocket and Guided Missile Agency guides development of the Missile system, with technical work directed by Western Electric Co., Bell Telephone Laboratories, and Douglas Aircraft Co.

Lost Sewage Gives City Hard Time

Niagara Falls, N. Y., recently pulled a switch in the perennial search for ways to get rid of waste water. The city went to a lot of trouble to find four million gallons a day.

They found it, along with a sizable repair job.

The loss came to light as a result of a break in a 42-in. clay sewer serving some chemical plants. Officials let a contract for the repair and then routinely inspected the rest of the line.

All looked well until the inspectors got to the last manhole, a tee intersection where the 42-in. sewer was supposed to empty an interceptor. There they found the 42-in. pipe dry.

That fixed the point of disappearance somewhere in the last 450 ft, all of which is in rock tunnel, but no break could be seen from the manhole at either end of the section. So a diver was sent down. The line was running only half full, but the diving gear was a precaution against gas and unknown conditions in the pipe.

The diver advanced 300 ft from the upstream manhole before his equipment stopped him. From here he could see by flashlight that the waste water was disappearing into an opening about 40 ft farther along.

From downstream, he could approach only 30 ft toward the cavity. The pipe had disintegrated. But he could see by flashlight to the pit.

Meantime a dye tracer put into the 42-in. sewer upstream from the cavity disclosed that the waste wasn't lost after all. It was reappearing in the interceptor about 60 ft upstream from the intersection manhole. But the damage still had to be assessed.

With the cavity located, the department decided to go straight down from the surface and have a look. They hired a well driller to sink a 30-in. shaft through the 25 ft of soil and rock cover. Then a man with a flash camera was lowered on a rope. He couldn't find a ledge or other footing (half the normal volume of waste was still flowing, the other half rechanneled), but dangling on the rope he managed to photograph the cavity.

The final repair plan will have to await a detailed inspection. The first stage is to replace the intersection manhole with a 10x10-ft shaft and to clean out the disintegrated sewer.

Meantime, a close inspection of the 42-in. line by the diver has shown that all 1,200 ft of it may have to be replaced, a $200,000 job.

New Sewage Plants in Sad Shape

Jersey City learned last week that its two four-year-old primary sewage treatment plants are in an appalling mess that will cost $3 million to clean up. Mismanagement, faulty maintenance and inadequate equipment got the blame. The Jersey City Sewerage Authority promptly fired its consulting engineer and five other aides.

Details filled an inch-thick report to the authority by Mayo, Lynch & Associates, consulting engineers of Hoboken. Among their observations were grit 6 ft deep in the wet wells; sludge-filled sedimentation basins; broken, frozen, corroded and abandoned mechanical equipment; cracked digester tanks. They concluded that:

- Certain plant components never have functioned, others are "incapable of fulfilling their intended functions."
- Neither the interceptor system nor the treatment plants have been properly operated or maintained.
- The City of Jersey City has not properly maintained its sewer system or enforced ordinances controlling industrial wastes.
- Rehabilitation of the plants is of primary importance and emergency repairs should be made immediately.
- A complete reorganization of plant personnel is necessary.
- The administrative system is ineffective and wasteful.
- Additional sewer connections should be solicited since the plants now are operating at only half their rated capacities.
- A capital improvements program should be started to insure future modernization.

The report makes one cheerful revelation: Despite the failures and malfunctions, sewage treatment has met minimum standards set by the Interstate Sanitation Commission, an agency established by compact to set pollution standards in interstate waters of New York, New Jersey and Connecticut.

The authority has not made any decision as to financing, but one possibility under consideration is a loan from the city.

The two plants were built in 1957 at a cost of $40 million by the Garden State Constructors & Associates, Inc., a joint venture of Terminal Construction Co., Woodridge, N. J., sponsor; George M. Brewster & Son, Bogota, N. J.; La Fera Contracting Co., Newark, N. J.; and Miele-Salvatore, Maplewood, N. J. Consulting engineer for the Jersey City Sewerage Authority during construction was Clyde Potts Associates, now defunct.

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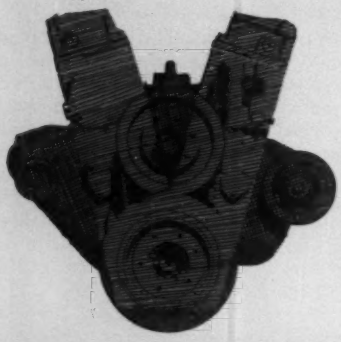

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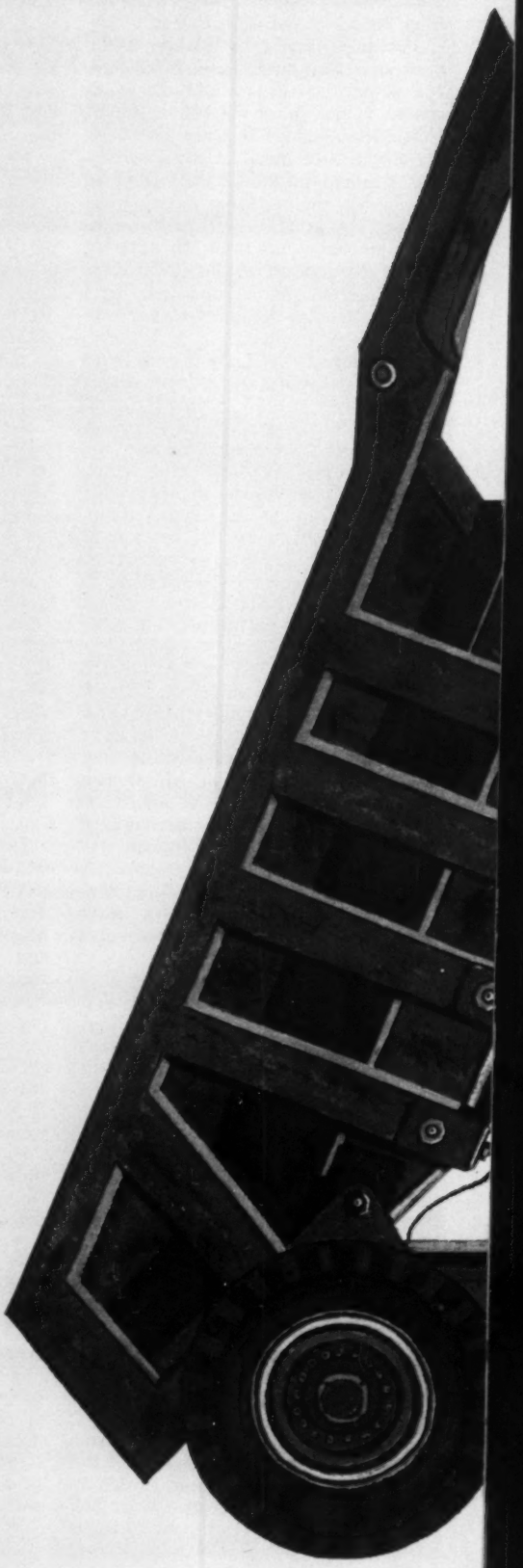

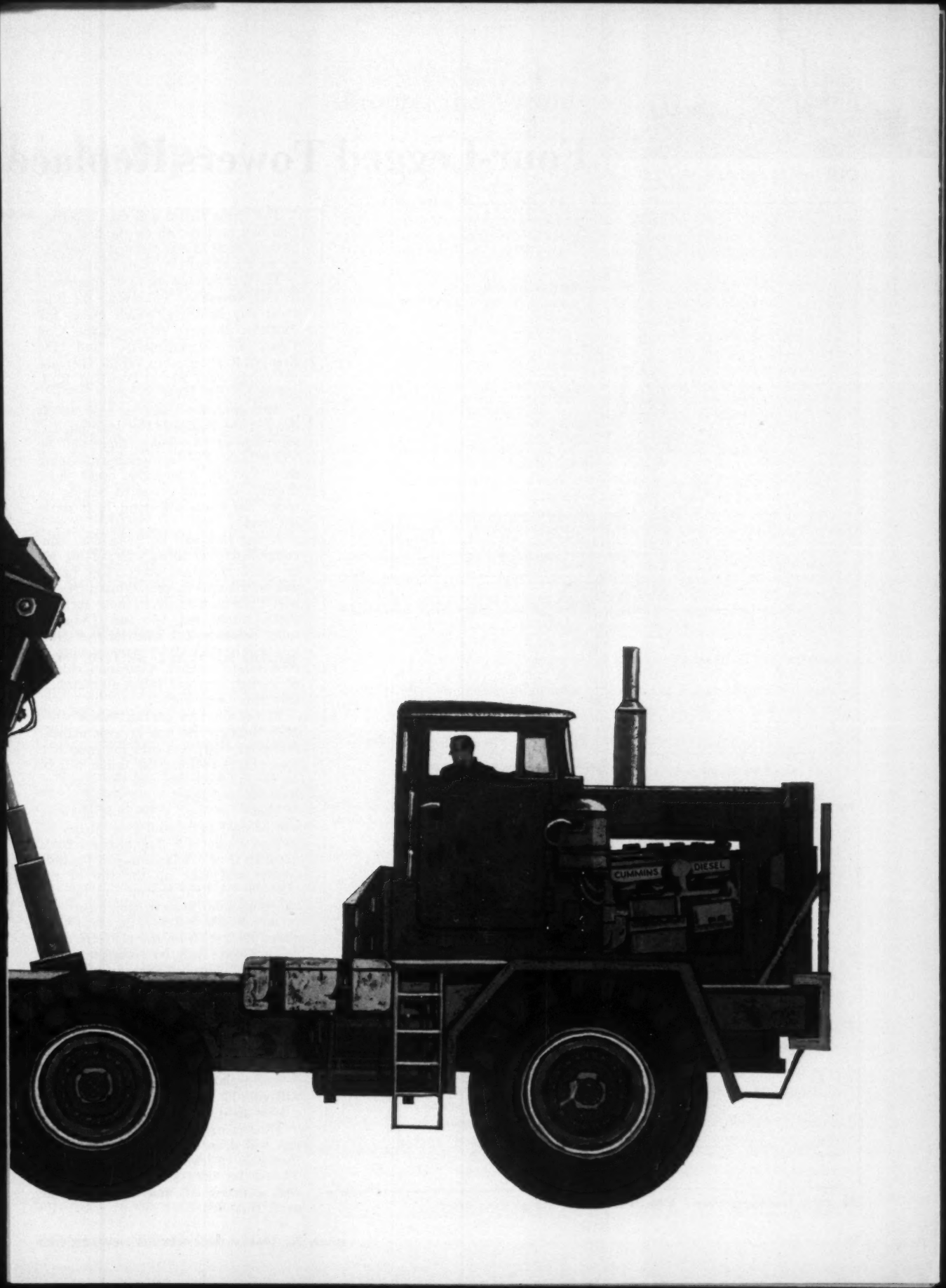
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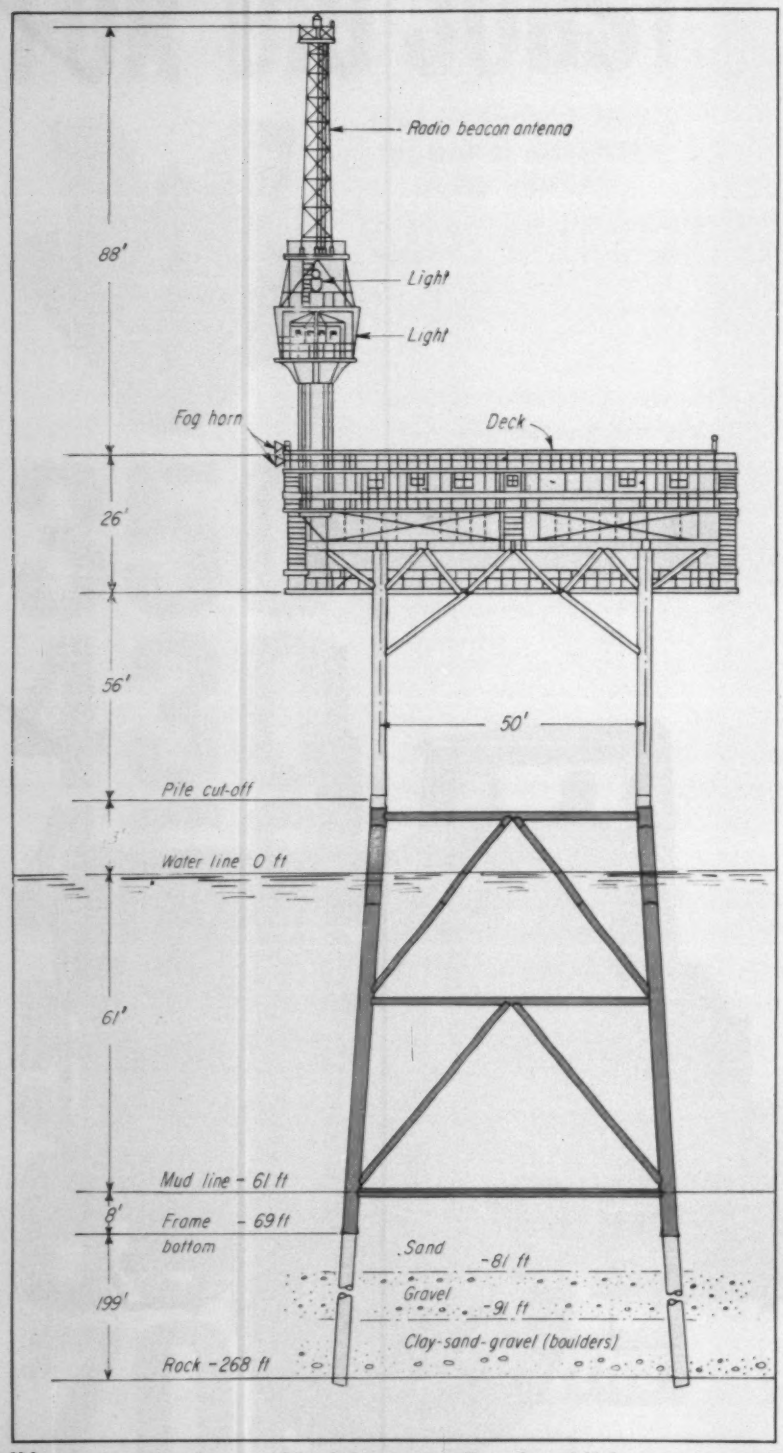
OUT go 22 lightships after 140 years.

Four-Legged Towers Replace



IN comes four-legged tower. Piles, below frame, will go down 268 ft.

The Coast Guard will take construction bids next month on the first of 22 offshore light towers planned as replacements for all but two of its lightships.

The first two towers, to be completed by this November, will replace the Buzzards Bay lightship, which marks the southern entrance to the Cape Cod Canal in Massachusetts, and the Brenton Reef lightship, off the entrance to Narragansett Bay at Newport R. I. (ENR July 28, 1960, p. 26).

Although the water is only 60 ft deep at the Buzzards Bay location, the four legs of the towers there will be 338 ft long. The legs will burrow more than 200 ft below the ocean floor through sand and gravel to bearing on rock. The tower will stand 70 ft above sea level.

Tower legs will be 33-in.-dia., concrete-filled steel tubes with 12- or 14-in. steel H-section cores. Leg braces will be arranged to form Warren trusses, with 12¾-in.-dia steel tube sections above water and 16- and 18-in.-dia tubes below water. Steel for the structure will be ASTM A7 material with all connections welded. Corrosion shields of wrough iron will jacket all members near the water line.

At the site, the contractor will drive piles through the legs of a permanent frame set eight feet into the mud bottom. Plans indicate the frame will be set in one piece and will rise about 13 ft above the water.

Above the legs, a 70x70-ft platform will contain upper and lower decks for storage, equipment and quarters for a five-man crew. A landing pad for helicopters will take up the top of the platform. A light beacon and fog signal—plus radio beacon equipment—will occupy a side tower rising to 170 ft above sea level from the platform deck.

The tower will be completely self-sufficient. Three 40-kw diesel-electric units will be installed.

The second tower, off Brenton Reef, will differ from the Buzzards Bay design in several ways, though general design of the structure will be the same. It will have a four-leg pedestal, but a smaller platform, 30x30 ft. The tower will rise 71 ft above water level with a 16-ft light mast above the platform.

The site makes the difference. Tower legs will drop through 61 ft of water, then sink 14 ft directly into ledge rock. They'll be the same size steel shell with concrete fill and H-section core as at Buzzards Bay.

Lightships

Reason for the smaller platform is that Brenton Reef will be a remotely controlled installation, with power and control cables running two miles to shore. Three 20-kw diesel-electric units will act as an automatic emergency power source on the tower.

Engineers designed both towers against 40-ft-high breaking waves and 150-mph winds.

Estimated cost of the two towers has dropped since the Coast Guard first announced the program. Capt. Daniel J. Lucinski, civil engineering chief for the First Coast Guard District at Boston, says the two towers should cost about $1 million. Contractors will be able to bid either or both towers when they submit their prices. The bid-letting is scheduled for April 11. Construction and outfitting of the towers, will be under the supervision of Captain Lucinski's office.

J. Ray McDermott & Co., Inc., New Orleans, handled design of the towers.

A-E's Manual Explains How to Use Their Building

Architects-engineers for a $20-million office building have written a 10-volume 800-page manual on how to operate and maintain it. They believe that this is the first time such a manual has been prepared for a major building.

The owner, the Indiana State Building Commission, concerned over the complexity of $10 million worth of equipment to be installed in the new Indiana State Office Building in Indianapolis, asked the designers to develop the comprehensive operations guide. The architects-engineers, Graham, Anderson, Probst and White, of Chicago, predict this practice will spread.

The manual describes the theory, operation procedure, maintenance and servicing techniques for equipment and materials throughout the building. Cross-referenced with the manual is a bound file of manufacturers' catalogs, with parts lists, wiring diagrams, drawings and other details of each item. The 10 volumes are bound into four 200-page books covering building materials and equipment; kitchen equipment; electrical and fire equipment; and heating, refrigeration, air conditioning, temperature control and plumbing.

Annual operating and maintenance costs for the building are estimated at $2 per sq ft, further underscoring the importance of efficient maintenance.

Around the World . . .

• **Renewal chief named**—William L. Slayton last week was appointed to head the Urban Renewal Administration. Mr. Slayton was a vicepresident of Webb & Knapp, Inc., New York City real estate development company, and a partner in I. M. Pei & Associates, architects (ENR Mar. 16, p. 31).

• **South America's tallest**—Construction on a 65-story skyscraper, South America's tallest, is scheduled to start in Buenos Aires late this year. Design of the structure will be open to worldwide competition. European bankers will finance the project, estimated to cost $20 million.

• **If at first**—Another proposal for redeveloping London's Piccadilly Circus includes rebuilding of London Pavilion on a raised deck bridging one of the main streets. One version calls for a roof outlined in lights; another calls for a series of low metal roofs with neon advertisements on trellis above them.

• **Japanese road loan**—Japan will begin negotiations with the World Bank this fall for a second loan, an additional $40 million, for construction of an expressway running the length of Honshu, the main Japanese island.

• **Niger crossing**—Dumez (Nigeria) Ltd., a French construction company, will begin work this year on a $14-million steel truss bridge over the Niger River between Onitsha and Asaba, about 150 miles from the river's mouth. The work will take four years.

• **Recreation at TVA-land**—Nearly $20 million was invested last year for recreation facilities and improvements on the lakes and reservoirs of the Tennessee Valley Authority. This is a 20% increase over 1959 and brings the value of lakeshore facilities to $120.5 million. This figure includes over 51,000 projects worth nearly $35 million.

• **Big medicine**—Construction of the most modern medical center in Asia, a $25-million project in Baghdad, Iraq, is scheduled for completion in 1964. Featured building is an 11-story, 1,000-bed teaching hospital. Architect Edmund J. Whiting of New York City was in charge of design.

• **Himalayan highway**—Indian Army engineers have completed the first 50 miles of a 140-mile road through the mountains between Gangtok, capital of the kingdom of Skkim, and the Tibetan border. Work began after border disputes with China erupted. Completion is scheduled for early 1962.

• **Brazil plans refinery**—The National Petroleum Council of Brazil has approved construction of a 25,000-gpd oil refinery in Belo Horizonte and a $300-mile-long pipeline from Rio de Janeiro. When the government provides the money for the work, the refinery and the line will be built and run by Peterobras, the national oil monopoly.

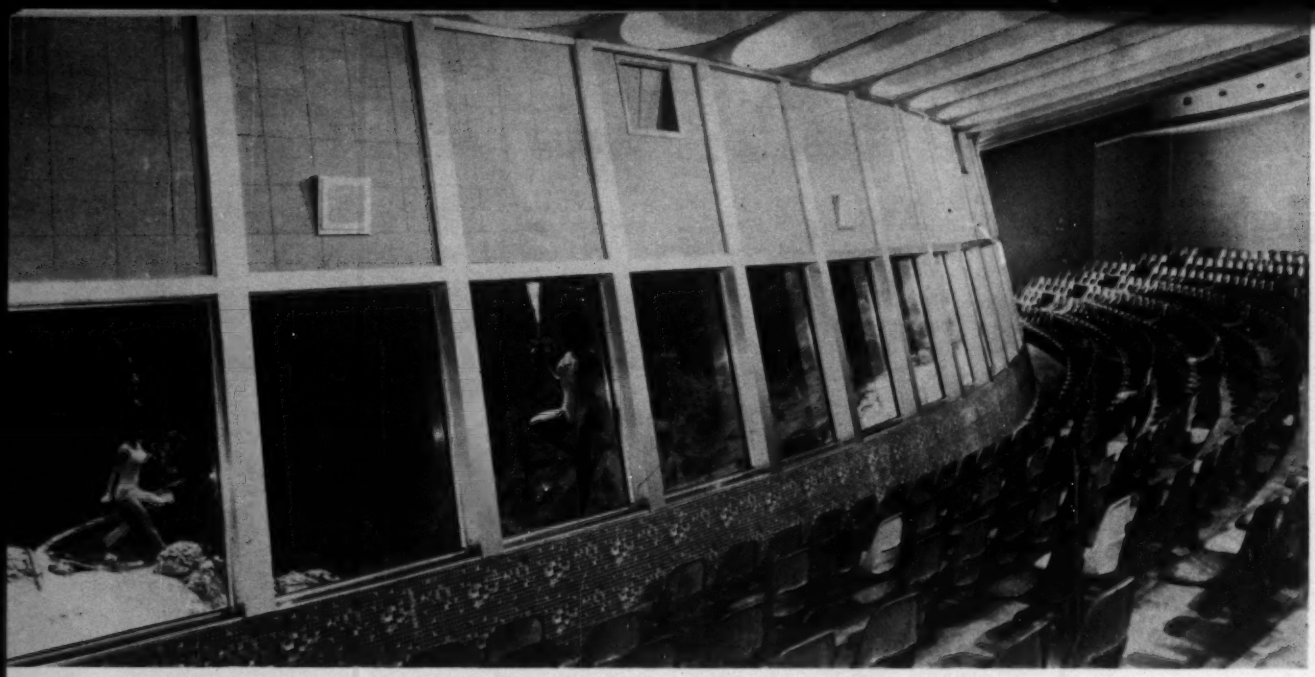
• **New docks for Tangier**—Morocco's Port of Tangier is readying a $30-million port development program that will include construction of two piers, one 1,082 ft long, the other 2,132 ft long. Three off-shore docks for supertankers will be constructed outside harbor limits. Money will come from both government and private sources.

• **Ethiopian airports**—The Civil Aviation Department of the Ethiopian Ministry of Public Works and Communications will let contracts to U. S. builders for construction or improvement of five major and 22 minor airports. A $19.5-million loan from the Development Loan Fund will pay for the work.

• **Money and manpower**—E. I. du Pont de Nemours & Co., Wilmington, Del., has spent $200 million on construction this year, most of it designed and built by the company's own forces. The firm's engineering department includes 650 design engineers and 200 construction engineers.

• **Mill designer named**—A $25-million newsprint mill, scheduled for construction next year at Crofton, B. C., will be designed for B. C. Forest Products, Ltd., by H. A. Simons, Ltd.

• **New Severn bridge**—Construction of foundations and substructure for the new, $30.8-million suspension bridge across the Severn River, north of Bristol, England, will begin soon. The bridge will have a 3,240-ft main span.



Completed theater has 2½-in.-thick laminated glass between U-shaped steel bents.

Underwater Theater Calls for

By James Owen Power

Some unusual construction, including prestressed steel foundation rods, went into an underwater theater in Florida. The theater replaces a submerged steel tank from which audiences formerly viewed the underwater ballet in Weeki Wachee spring, 60 miles north of St. Petersburg.

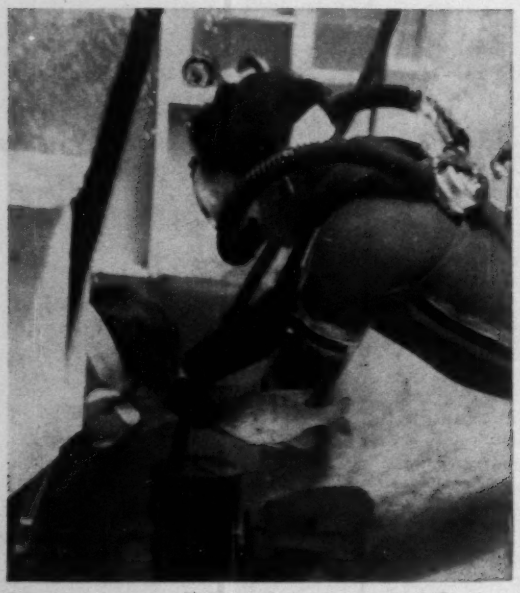
Mr. Power is a partner in Dignum Associates of Miami, the structural engineers on the project.

Located at the spring's edge, the steel-framed theater is curved in plan, with a radial width of 23 ft and a chord length of 92 ft at its interior wall. U-shaped bents, spaced radially about 5 ft c-c, support sloping conical precast roof sections over the 400-seat auditorium area.

Steel plate, ¾ in. thick, clads the tank below the water line. A concrete slab, cast on the floor plate, forms the stepped auditorium floor. Thick glass panels, 6 ft high, span between the steel bents at the submerged front wall, providing an almost continuous view of the swimmers. A concrete block wall above grade supports the precast roof at the rear.

Chief problem facing the engineers was how to avoid damaging the structure of the spring. The theater's front wall is located near an almost vertical wall of the spring.

The first of two proposed methods entailed driving sheet piling, placing a tremie sealing slab and then pumping



Divers seat tank floor beams on H-piles.

After underwater assembly, tank is pumped dry.

H-piles are driven, as a ring segment in plan, on the edge of 140-ft-deep spring in Florida.

Unusual Construction Methods

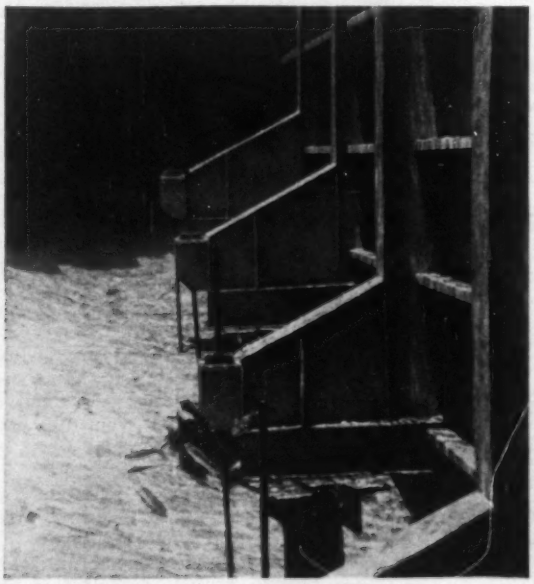
the water out. The theater superstructure could then be assembled in the dry. The danger of spalling rock from the spring wall during the driving operation posed too great a risk, however, so the engineers rejected this method.

The engineers chose a less hazardous procedure: driving piles to support the steel bents and assembling the structure underwater. To resist hydrostatic uplift on these piles, they specified prestressed steel anchor rods grouted into cavities underlying the pile-bearing stratum. The steel tank was then assembled underwater and connected to the piles and anchor rods. It was then pumped dry.

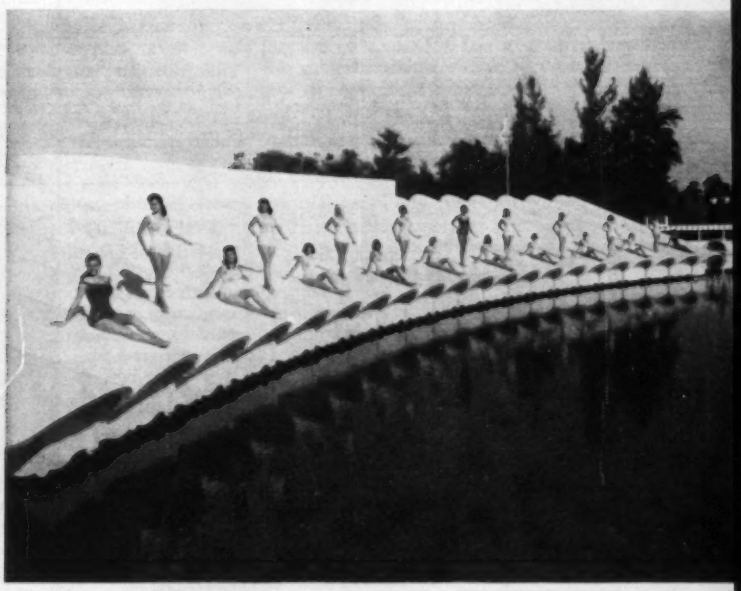
The pile-driving subcontractor, John Burgstines Construction Co., Sarasota, drove the steel H piles through sand and loose sandy limerock to a hard limerock stratum about 35 ft below the spring surface. Then the subcontractor drove 5-in. pipe casings, one located outside each pile, and drilled holes through the hard rock into soft underlying rock. Loose material was jetted to form cavities 10 to 20 cu ft, later to be pumped full with a stiff grout mixture of equal proportions of cement and sand.

Prestressing the anchor rods stabilizes the structure's movement during dewatering, which merely relieves the compressive stress on the H piles instead of increasing the stress and consequent elongation in the rod.

After divers had seated and bolted the tank to its pile supports, they connected the anchor rods to stiffener



Prestressed rods anchor tank to H-piles.



Shapely live loads test precast roof shells.

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Darex Diary

by Mel Prior
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(No. 20 of a series)

FREEZE-THAW TESTING NOW AUTOMATED

TESTING THE EFFECTIVENESS of entrained air in combating freeze-thaw damage to concrete has come a long, long way in the past few decades. By all odds, however, the most important step forward ever taken in this phase of concrete testing is a new "weathermaking" machine for laboratory use, the Conrad Freeze-Thaw Chamber. To help you appreciate its importance, let's go back and take a brief look at some of the stages of development in freeze-thaw testing.

Back in the days when no ASTM test methods for evaluating freeze-thaw resistance were available, we resorted to a pretty basic technique. Solid concrete blocks were cast in a special mold to provide a dam which would hold calcium chloride solution on the surface of the concrete. These blocks were then set on racks in an area outside the lab to let nature take its course. New England weather enabled us to record an average of 40 cycles of freezing and thawing in a season. This was a slow process and in many instances, it took more than one season to come up with any significant results.

The next step was to develop a laboratory method, using a cold-storage chamber for freezing, which gave us some control of the cycles. This method was essentially the same as the present ASTM Designation C 292. During the first few years, it was necessary to rely on visual examination of the specimens, and/or weight loss for evaluation. However, this technique served its intended purpose in many thousands of tests.

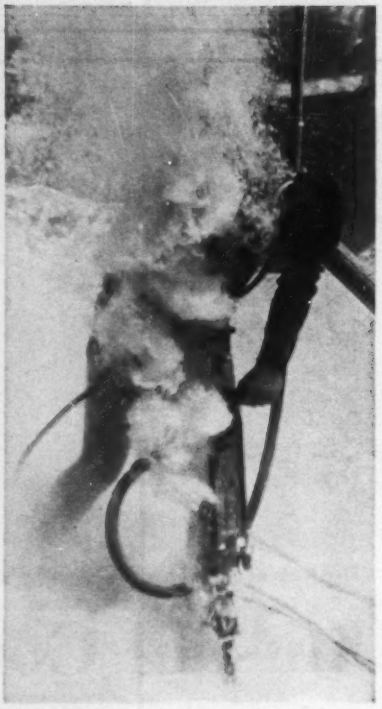
Late in the 1930's, the use of sonic vibration was suggested. We constructed several sonic modulus units for use in other laboratories, as well as in our own, and this method of comparing specimens proved to be a major advance in the development of nondestructive testing of concrete.

Now, however, the new and completely automatic Conrad Freeze-Thaw Chamber recently added to our laboratory facilities opens a whole new era of testing speed and efficiency. One of the few privately owned machines of its kind anywhere in the world, this apparatus will produce as many as eight complete freeze-thaw cycles in a single 24-hour day. Each cycle will bring the interior temperatures of the test specimens from 40 F. to 0 F. to 40 F. Thermocouples imbedded in the specimens deliver interior temperature readings. Test series can be completed in twenty to thirty days instead of the ten to fifteen months required by earlier methods.

New Conrad Freeze-Thaw Chamber in operation at Dewey and Almy concrete testing laboratory.

The unit is capable of automatically duplicating cycles in compliance with all four ASTM designations, C 290, C 291, C 292 and C 310. Controls can be adjusted to obtain practically any combination of time-temperature cycles. This flexibility permits investigation of many types of cycles which may, in some ways, more closely approach those actually encountered in the field.

Thus, this new "weathermaking" machinery will serve as an important research tool, as well as a superior testing facility for investigating concrete performance under standard ASTM conditions.



EXCAVATION by skin diver.

brackets welded to the tank. Hydraulic jacks then prestressed the rods to 60-kip tension. Each rod had been tested to its full prestress and then released before the tank was assembled.

The $\frac{7}{8}$-in. rods vary from 41- to 57-ft lengths. Plates at the lower ends anchor the rods in the grout.

A fleet of seven low boys transported the tank sections in a caravan. It required four days to make the minutely planned, 110-mile trip from the fabricating plant of Southeastern Sales and Service Co. in Bartow. The largest unit measured 24x17 ft in cross section and weighed 15 tons.

At the site, the erectors installed the glass windows and set the sections, consisting of three bays each, one at a time. Bolted joints between the sections were made watertight with neoprene gaskets to prevent leakage after the tank had been pumped dry. Welders could then weld the sections together, and the stepped floor slab was ready for concreting.

The $300,000 project also included access ramps behind the auditorium and a lobby. Below the auditorium floor a 48-in. corrugated metal swim tube provides an invisible underwater access to the spring for the mermaids.

Architect was Robert E. Collins of Miami. James P. McGlinchy was project engineer for Dignum Associates, the structural engineers. General contractor was Dewitt, Furnell & Spicer of St. Petersburg.

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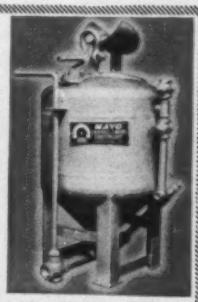

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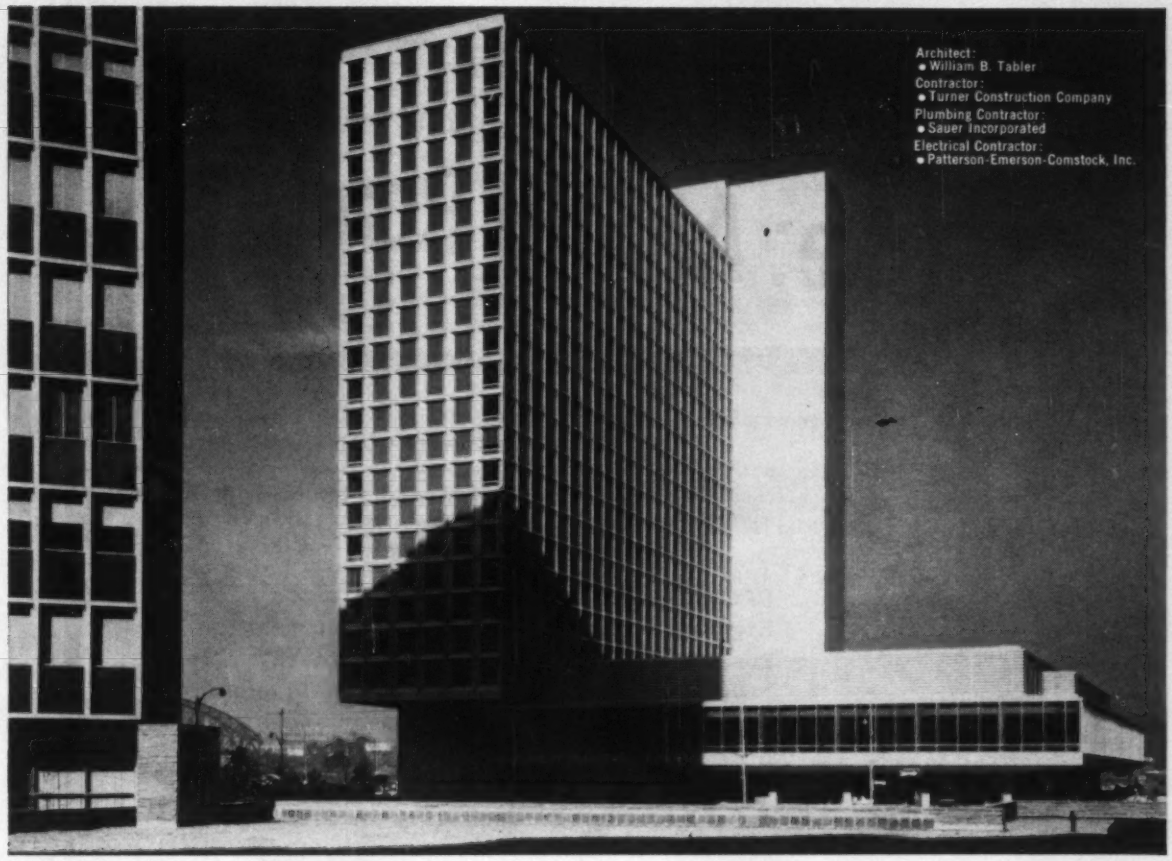
Lancaster, Penna.



Versatile **steel pipe** lines the Golden Triangle's "$15 Million Jewel Box," The Pittsburgh Hilton

15° to 90° bends are simple to form, joints quickly cut and made on the job when rigid steel conduit is used for light, power and communication lines. Its strength, durability and rigidity enables it to withstand abnormal abuse.

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Thousands of feet of *steel pipe* are efficiently and silently at work in the glamorous new Pittsburgh Hilton. *Steel pipe* water, waste and vent lines will provide decades of maintenance free service. The hotel's electrical network will function efficiently and well because it is enclosed in time-tested rigid steel conduit.

There are many other good reasons for the universal uses for *steel pipe* and rigid steel conduit in monumental buildings. Among them are:

1. Steel pipe and rigid steel conduit are available everywhere in required sizes, finishes, quantities. They meet all codes.
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COMMITTEE OF STEEL PIPE PRODUCERS

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Memo to Highway Engineers:

Re: AASHO Road Test

REQUEST FROM AMERICAN ASSOCIATION
OF STATE HIGHWAY OFFICIALS

Officers of the American Association of State Highway Officials (AASHO), the sponsor of the Road Test research project at Ottawa, Illinois, have expressed their hope that neither the Asphalt nor the portland cement industry will draw conclusions from the project ahead of the completion of the analysis of data and the interpretation of such data into final reports.

AASHO officers state that they do not believe any conclusions can properly be drawn at this time.

Moreover, these officers charge that any action to read premature findings from the project tends to reduce the public benefits from the expenditure of rather large amounts of public funds which went into the test.

Specifically, these AASHO officers have requested that AASHO's name not be used in any advertisements purporting to give results of the Road Test ahead of final reports because such use might convey the impression to the public that AASHO endorses the advertising.

This request from AASHO officers was directed to the portland cement and Asphalt industries on March 1, 1961.

THE INTENT OF THE AASHO ROAD TEST

The Official Statement of the Highway Research Board*
which Administers and Directs the Test:

The AASHO Road Test plays a role in the total engineering and economic process of providing highways for the nation. It is important that this role be understood.

The Road Test is composed of separate major experiments, one relating to asphalt concrete pavement, one relating to portland cement concrete pavement, and one to short span bridges. There are numerous secondary experiments. In each of the major experiments, the objective is to relate design to performance under controlled loading conditions.

In the asphalt concrete and portland cement concrete experiments some of the pavement test sections are underdesigned and others overdesigned. Each experiment requires separate analysis. Eventually the collection and analysis of additional engineering and economic data for a local environment are necessary in order to develop final and meaningful relations between pavement types.

All of the short span bridges are underdesigned. Each is a separate case study.

Failure and distress of the pavement test sections and the beams of the short span bridges is important to the success of each of the experiments.

The Highway Research Board of the National Academy of Sciences—National Research Council has the responsibility of administering the project for the sponsor, the American Association of State Highway Officials, within the bounds of the objectives of the test. The Board is also responsible for collecting engineering data, developing methods of analysis and presentation of data, drawing valid findings and conclusions, and preparing comprehensive reports describing the tests and the results. It is here that the role of the AASHO Road Test ends.

As the total engineering and economic process of providing highways for the nation is developed, engineering data from the AASHO Road Test and engineering and economic data from many other sources will flow to the sponsor and its member departments. It is here that studies will be made and final conclusions drawn that will be helpful to the executive and legislative branches of our several levels of government and to the highway administrator and engineer.

*Highway Research Board is a unit of the
National Academy of Sciences—National Research Council.

THE ASPHALT INSTITUTE

-has not sponsored, and is not sponsoring, any advertisements about results of the AASHO Road Test.

Further, The Asphalt Institute agrees with the propriety of the above request from AASHO officials. Also, The Asphalt Institute subscribes to the above statement of the INTENT of the AASHO Road Test.

J. E. Buchanan

J. E. Buchanan
President
The Asphalt Institute

Woodrow Wilson Memorial Bridge is double leaf bascule with single tower. Design emphasizes unity,

Good Looks Count in This Bridge

Bridge designers and builders in the Washington metropolitan area must include in their calculations a relatively unfamiliar quantity—aesthetics.

Not that engineers and contractors have no sense of beauty—they do. But in the nation's capital, they have to satisfy the National Commission of Fine Arts, which passes on the architectural design of every structure built by a government agency. Thus architectural considerations establish the framework within which the engineer and builder must work to achieve economy, strength and durability.

A case in point is the $12-million Woodrow Wilson Memorial Bridge, now under construction across the Potomac from Jones Point, Alexandria, Va., to Rosalie Island, Prince George's County, Md. The bridge uses a double-leaf bascule to carry each roadway over the navigable channel. The 5,900-ft, six-lane, steel-and-concrete structure will be a link in the Washington Circumferential Highway.

In closed position, the bascule span has minimum clearance of 50 ft above mean high water. Horizontal clearance between fenders is 175 ft.

The two columns that support each of the bascule trunnions are of different design. And the contractor—Phoenix Bridge Co of Phoenixville, Pa—was responsible for controlling and compensating for anticipated dead load deflections in the interior columns. Phoenix's method was both ingenious and practical.

Anchor span steel girders are the longest and deepest items the fabricator has ever shipped by rail. They are about 171 ft long and 13½ ft deep.

The crossing presented many architectural problems. As finally approved by the Commission, the design emphasizes unity, simplicity and continuity. These qualities are realized by the use of a single type of substructure supporting a single type of superstructure throughout the long approaches to the dominant motif supplied by the bascule leaves, their piers, and the operator's tower.

The approach superstructure is of girder, floorbeam and stringer construction. Two girders support each roadway, except in the anchor spans of the bascule bridge, where three girders support both roadways. Toward the channel, span lengths increase as the roadway rises, producing a sense of balanced proportion of openings. The necessity for increased structural depth in these spans is satisfied by a linear variation of the depth of girders. A pleasing composition results therefrom, with none of the unsightly bolstering of shoes or haunching of girders at junction piers seen so often in this kind of structure.

A combination of aesthetic and structural considerations dictated the form of the substructure. Because of the considerable variation in height from the east abutment to the bascule piers, the most suitable single type of approach pier is one providing a separate shaft for each girder support. The shafts are untapered cylinders. To keep them as slender as possible as their heights decrease, most of the approach spans were made continuous over four piers with, generally, one long cantilever and one short cantilever. Successive units of this type are connected by rocking links at the points of zero dead load moment. This design requires only one shoe on each shaft. Where the shafts are tall and a large diameter is required because of high moments at the base, the superstructure is three-span continuous without cantilevers. There are two such units adjacent to each of the simple anchor spans.

To emphasize the function of the bascule spans, designers altered the smooth line of the lower flanges of the girders, flowing on each approach from abutment to bascule piers, to produce a broad inverted "V" with its apex at the centerline of channel.

Since the channel is much closer to Jones Point than to Rosalie Island, the overall composition is asymmetric. The conspicuous vertical element provided by the operator's tower on the west bascule pier is in keeping with the total composition and provides it with a striking dynamic balance. Three purposes were served by placing the floor of the operator's tower 32 ft above the deck: the operator is given excellent sight lines over the far parapet; a generous area is provided on the face of the tower for the inscription of dedication and a bas-relief of President Wilson; and the control tower is made the dominant architectural feature of the span.

At the level of the operator's platform the control tower is coped with a polished black granite. From this point down to the granite protection base at water level, the control tower has a facing of Indiana limestone. The remaining surfaces of the bascule piers and housings are of concrete. The contractor used rustication strips in the forms and carefully controlled lifts to

simplicity and continuity.

Contractor erected bascule leaves in the closed position.

Design

produce a uniform continuation of the joints of the limestone slabs facing the control tower.

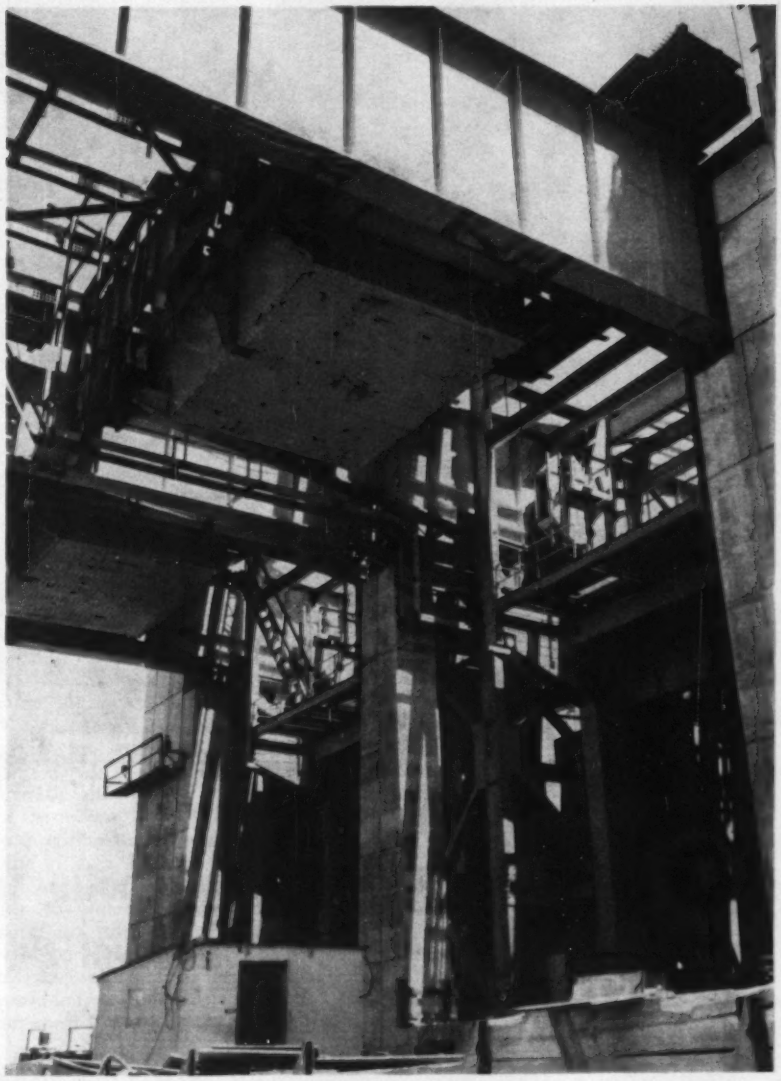
Polished black marble surmounts this concrete on the north side of the west bascule pier and on both sides of the east bascule pier. Large slabs of dark gray granite, factory sawn, were used as form linings for sheathing the bases of the bascule piers and the control tower. Of simple design, they achieve, in combination with the concrete, limestone, and granite coping, a harmoniously composed monolith.

The broadly cantilevered deck, with its sloping-faced parapet, contributes strong horizontal lines. The lighting standards, which are of the davit type, are inclined parallel to the slope of the face of the parapet. This brings the luminaires well over the roadway and assures integration of the lighting with the cross-sectional aspect of the bridge.

Lighting standards are aluminum-painted steel poles. Aluminum pipe of elliptical cross-section was selected for the bridge railing.

• **Foundation problems and solutions:** Engineers chose displacement piles for all pier and abutment foundations because of the nature of the strata underlying the river mud. Generally, this is soft clay over gravel underlain by a firm or hard clay. Since the gravel layer contains numerous cobbles, piles are cast-in-place and prestressed concrete.

Thorough study of boring logs and test data led designers to specify El-110 as the minimum pile tip elevation for the 80-ton piles used in the bascule piers. The ratio of pile cost per cu yd of substructure concrete is



Close-up shows trunnion columns and counterweights.

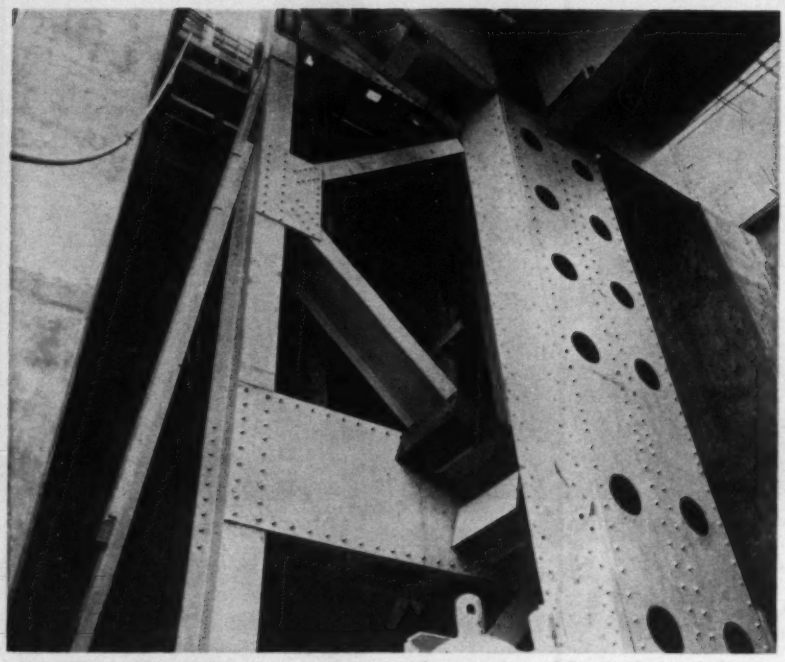
high; consequently, the bascule piers are of open design with curtain walls extending below the water line. The cofferdam seals for the bascule piers are founded at El—45.

For deep water piers other than the bascule piers, designers gave the contractor a choice of two methods of supporting the pier shafts and the concrete beam at the water line acting as a fender. Alternate A proposed a continuous footing with four rectangular shafts in line with the cylindrical pier shafts. Alternate B proposed two separate footings, each with a heavy rectangular shaft placed approximately at the first and third quarter points of the pier fender. In the low bid, Alternate A was slightly cheaper, and the piers were built accordingly.

Most of the east approach piers are in shallow water. Lower elevation of the 10-ft-thick footings is 5 ft below mean water. In some places the footings are in river mud for a foot or two; in others they are considerably clear of the bottom. The contractor chose to dredge a channel for floating equipment. He drove piles for each of these piers through a floating timber template secured by peripheral anchor piles. A sheet piling cofferdam was then driven and dewatered until the template could be lowered to serve as a bottom form for the footing. The contractor made the pile cutoffs and transferred the load of the template from the anchor piles to the prestressed concrete piles to provide support for the placement of concrete.

The bascule piers, up to El—42, and eight approach piers were built by the Arundel Corp., Baltimore, Md.; the remaining east approach piers, the east abutment, and the bascule piers above El—42 were a joint venture by Ruckman and Hansen, Inc., Ft. Wayne, Ind. and Roy Ryan & Sons Co., Evansville, Ind.; the remaining west approach piers, the west abutment and 850 ft of retaining walls were built by J. Kennon Perrin, Richmond, Va.

• **The superstructure:** Dimensions of the bascule leaf are 113 ft 6 in. from centerline of trunnion to centerline of span and 37 ft 2½ in. from centerline of trunnion to end of concrete counterweight box. Initially, studies were made of the relative costs of three-girder versus four-girder construction in the movable span. These showed a probable saving of about 5% for the former; however, engineers chose the latter type of construction because of its greater simplicity of detail and the greater ease of adjustment it makes possible. Another advantage is that one roadway can be kept open to traffic in the event of serious damage to a leaf carrying the other roadway.



ADJACENT COLUMNS supporting trunnion bearings have different designs. Interior column (right) is loaded eccentrically; exterior column is not.

The bascule girders are riveted plate girders of low-alloy, high-strength steel. These support broadly cantilevered 21-in.-WF sections, which function between girders as the top chords of trussed floor beams spaced about 17 ft on centers. Top chords of the floor beams support 14-in.-WF stringers, which carry a 5-in.-deep open grating floor. The counterweight arm and the counterweight are concealed by the exterior anchor span girders when the bascule leaves are closed; in the open position they are concealed in elevation by the bascule pier. At the rear of the counterweights, each girder is fitted with a live load anchor; at the centerline of span, opposing leaves are provided with center locks.

The specifications permitted the contractor to erect the bascule leaves in the open or closed position. Erectors for Phoenix Bridge Co. chose the latter option. Most of the dead load was placed with the trunnions out of the bearings, using falsework at the channel face of the pier. With this arrangement, the anchor span was used to counteract uplift as construction proceeded on the channel end of the leaf, the uplift being applied at the live load anchor floorbeams of the anchor span. The tail-uplift condition was lessened when the steel counterweight box was erected. As concrete was placed in the box, a tail-heavy condition was taken by yokes from the same floorbeams.

Prior to installation of the grid floor, workmen lowered jacks on the falsework and under the yokes to seat the trunnions in their bearings. Engineers checked the alignment of trunnion columns. Final balancing of each leaf was done after erection of the machinery floor, which is supported by the trunnion columns, machinery, and the roadway deck directly over the machinery floor.

The two columns supporting each trunnion are of different design. Because of clearance requirements for the counterweighted ends of the leaves in their open position, the interior of each pair of columns carries its share of the trunnion reaction as a longitudinally eccentric load on a bracket at the top of column. The exterior column, being clear of the leaves, is loaded at its center of gravity; it is consequently much lighter than the interior column. Since the height from centerline of trunnion to the trunnion column baseplates is slightly more than 46 ft, the anticipated difference in deflections due to shortening of the two dissimilar columns and the anticipated longitudinal deflection of the interior column could not be neglected.

Responsibility for controlling and compensating for differential dead load deflections was placed with the contractor. His solution effectively eliminated longitudinal deflection of the interior columns.

The contractor placed a rocker shoe, located in the vertical plane of the centerline of trunnion, in the grout pocket beneath the baseplate of each interior column. This required a

STEEL CONSTRUCTION STAYS ON SCHEDULE—This all-steel framework for an apartment includes high-strength bolted structural frame, open-web joists, and Slabform for poured concrete floors. All steel furnished by Bethlehem.

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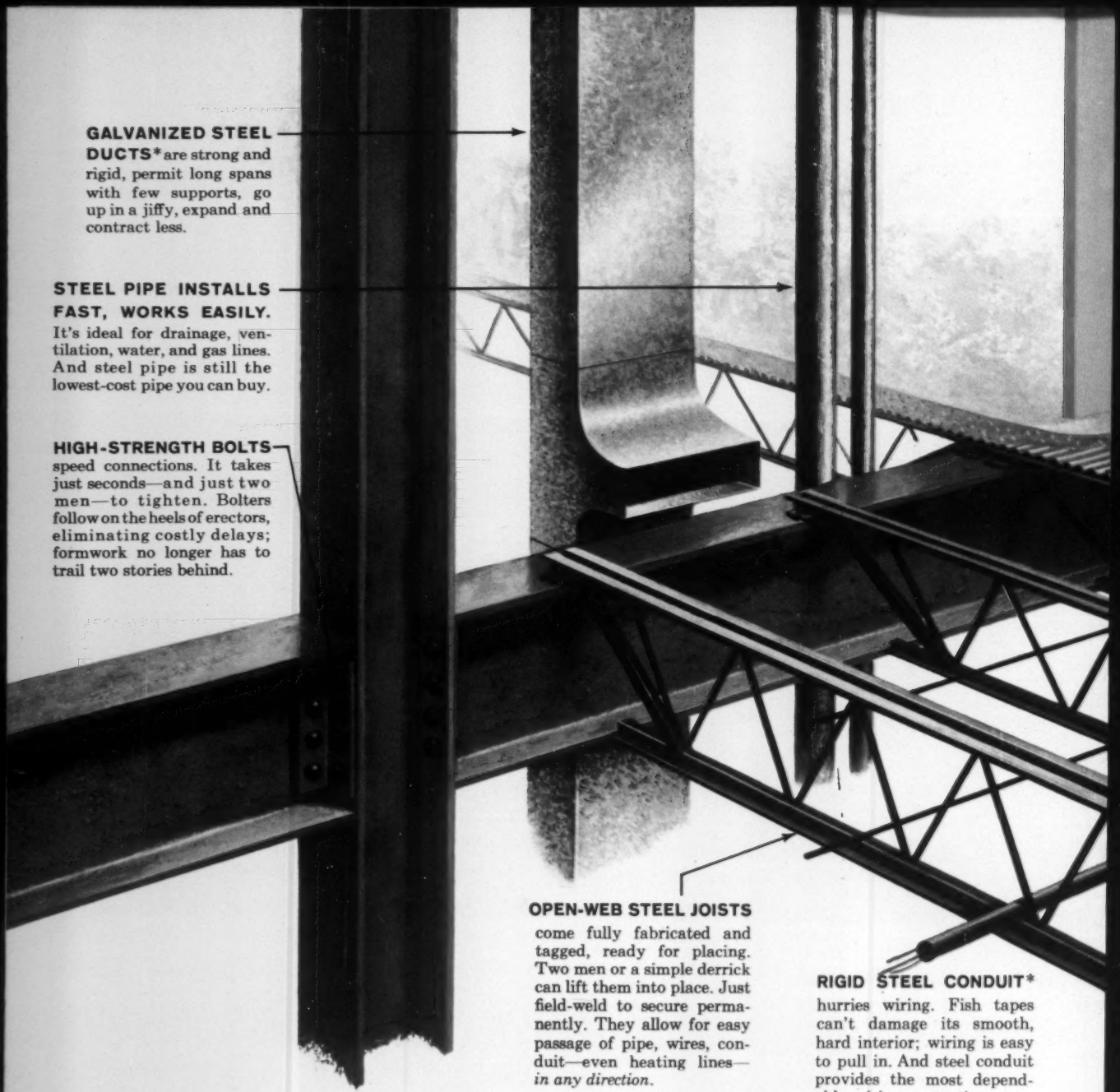

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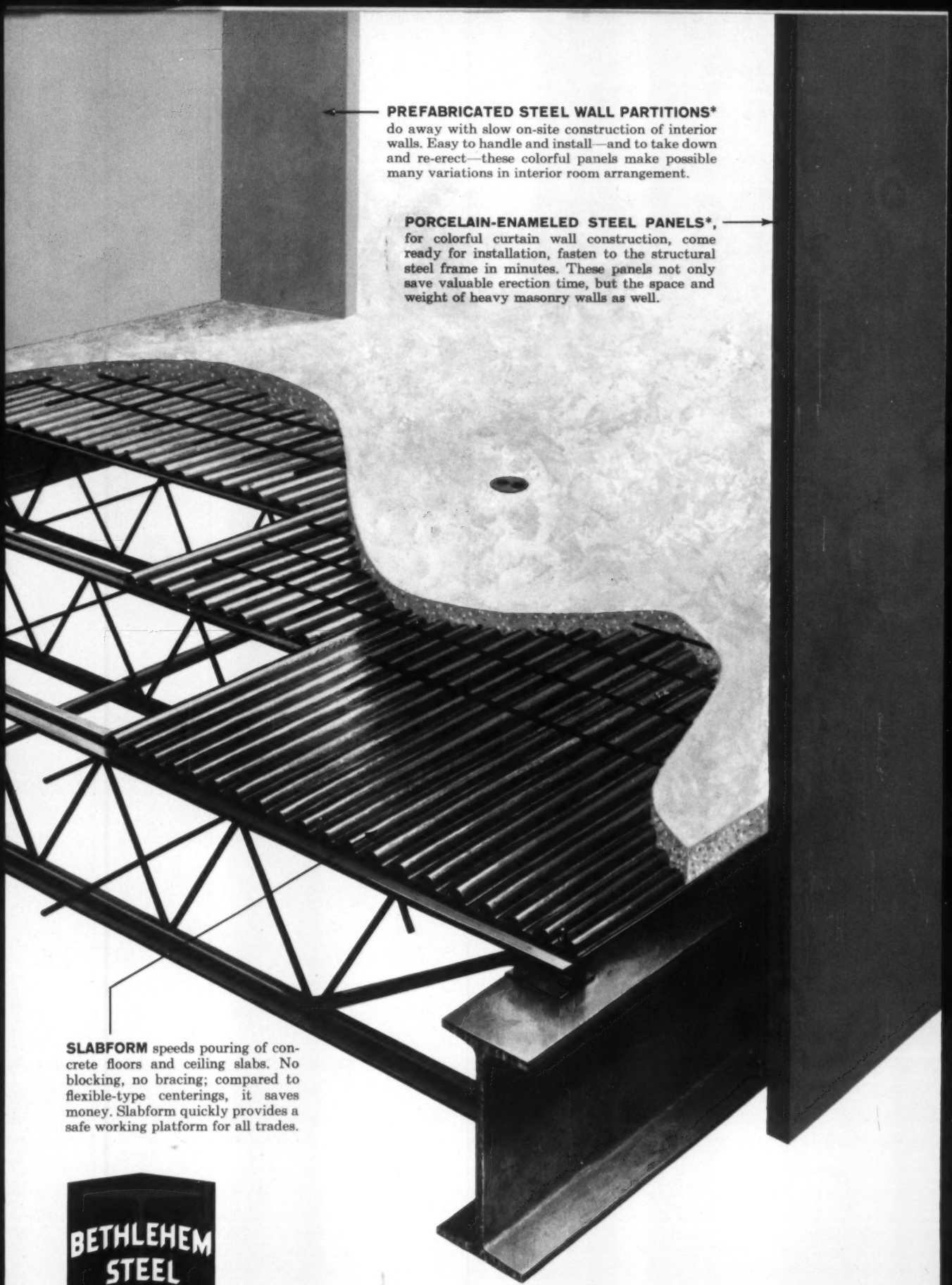

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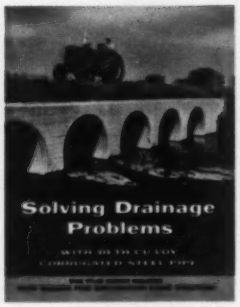

No. 425A This informative manual on corrugated sheet steel pipe includes tables for evaluating flow friction and other practical data.

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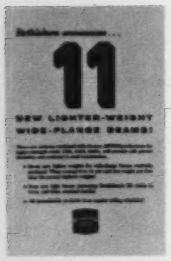

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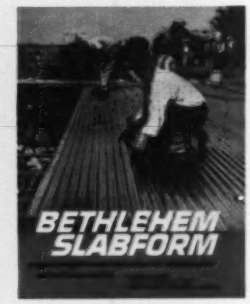

No. 683 Advantages and placing directions for Slabform, a solid centering for steel-joist and poured-slab construction.

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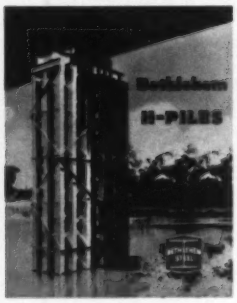

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No. 569 Reprints ASTM Specifications on 6 grades of structural steel which meet 98 per cent of all usual requirements.

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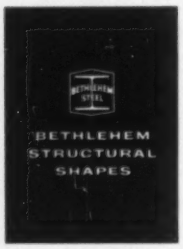
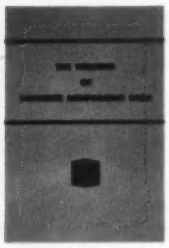


No. S-58 Describes standard beams and columns, with information and tables helpful to designers.



No. 527A Describes joint details and recommended procedures for welding reinforcing bars.

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Please send me the booklets circled below:

		549	425A	553
	582	683	563	223
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Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

PILE TEMPLATE hangs at elevation of bottom of pier footing as piles are cut to final elevation. Template later served as a bottom form for the footing.

certain amount of redesign of the column base. During construction, the contractor blocked the baseplate at heel and toe and kept the column plumb by wire rope and timbers at the top. At certain stages workmen removed the blocking and allowed the column to act as a pin-ended column. The blocks were then replaced and construction proceeded.

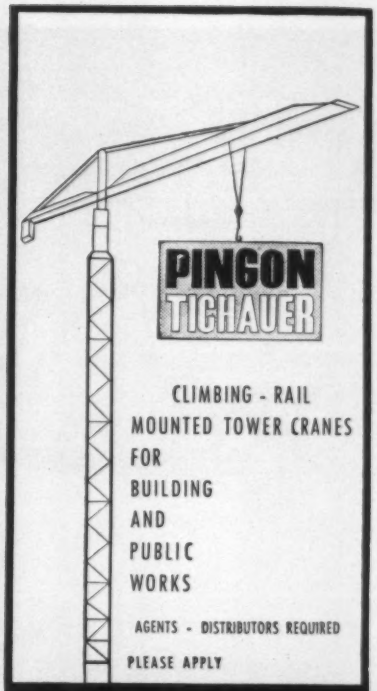
After full dead load was on the trunnions, workmen again removed the blocks, tightened upper and lower nuts on the anchor bolts at the heel and toe of the baseplate and filled the pocket with concrete. In final construction the shoe is inoperative, but the conditions of joint rotation and column bending produced by temporary pin-ending are "locked in" by the anchor bolts and concrete. It was found that the contractor's compensation for column shortening caused by compression and bending of the interior columns and compression of the exterior columns had in all cases been extremely accurate.

To minimize differential live load deflections, the inner column of each pair is restrained by a live load tie-down of opposite eccentricity from that of the trunnion, with a jacked-in preload of 100 tons.

The anchor span girders are of shop-welded construction, the four fascia girders in structural carbon steel and the two interior girders in structural low-alloy steel. They are the longest and deepest items the fabricator has ever transported by rail. Because of a tunnel on the rail route, specially designed car trucks were used. Each girder was supported on two of these, its bottom flange placed slightly above the axles. In rounding the sharpest curve along the route, the girders had to be blocked up sufficiently to enable the truck wheels to clear their 28-in.-wide flanges.

Phoenix Bridge Co. was contractor for steelwork in the bascule span, the anchor spans, and the four flanking three-span units; steelwork in the bascule piers; and machinery and electrical equipment. The remaining approach superstructure, the girders and floorbeams of which are of welded construction in structural carbon steel, is being fabricated and erected by Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa. The concrete deck contract has been awarded to McCloskey and Co., Philadelphia, Pa.

The bridge is being built by the Department of Commerce. Over-all responsibility for planning and design has been exercised by E. L. Erickson, Chief, Bridge Division of the Bureau of Public Roads. Construction is being supervised by personnel of BPR's Region 15; H. B. Herring is resident engineer. Howard, Needles, Tammen & Bergendoff, New York City consulting engineers, designed the bridge and are checking shop drawings. Work performed by the consultants is under the direction of James P. Exum, partner. A. Gordon Lorimer was the architectural consultant and Claude P. Hamilton the electrical consultant.



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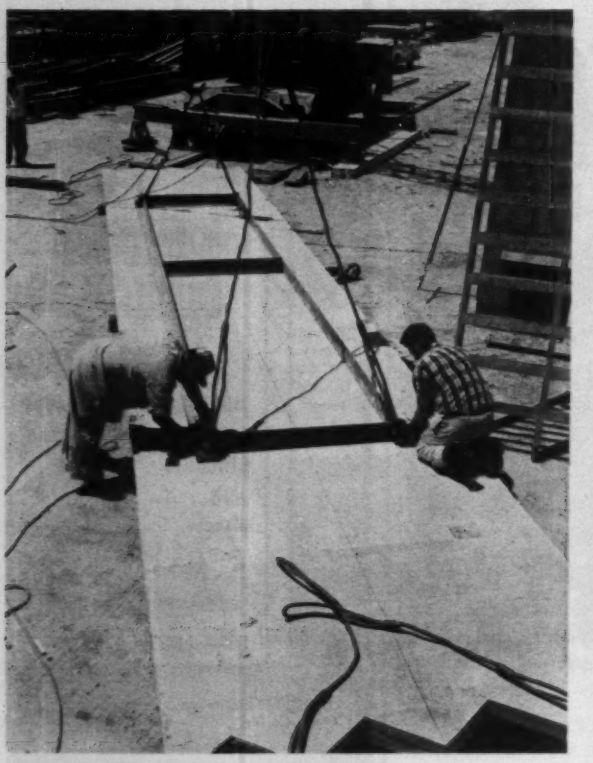
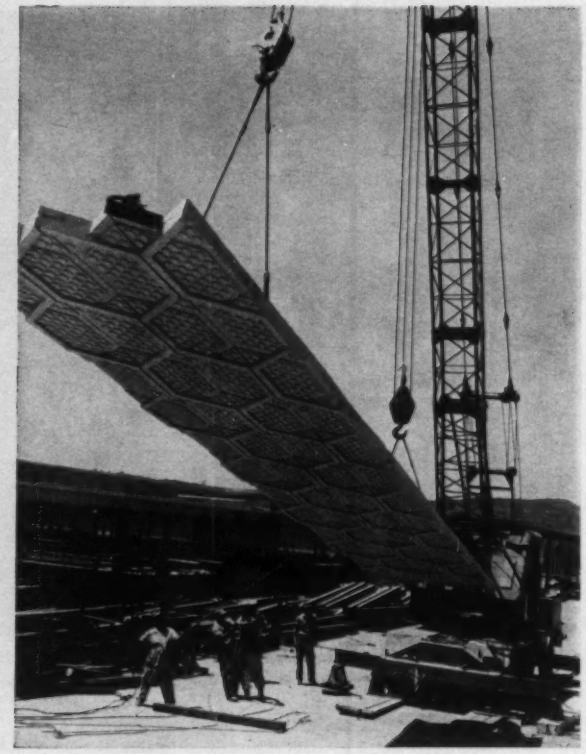


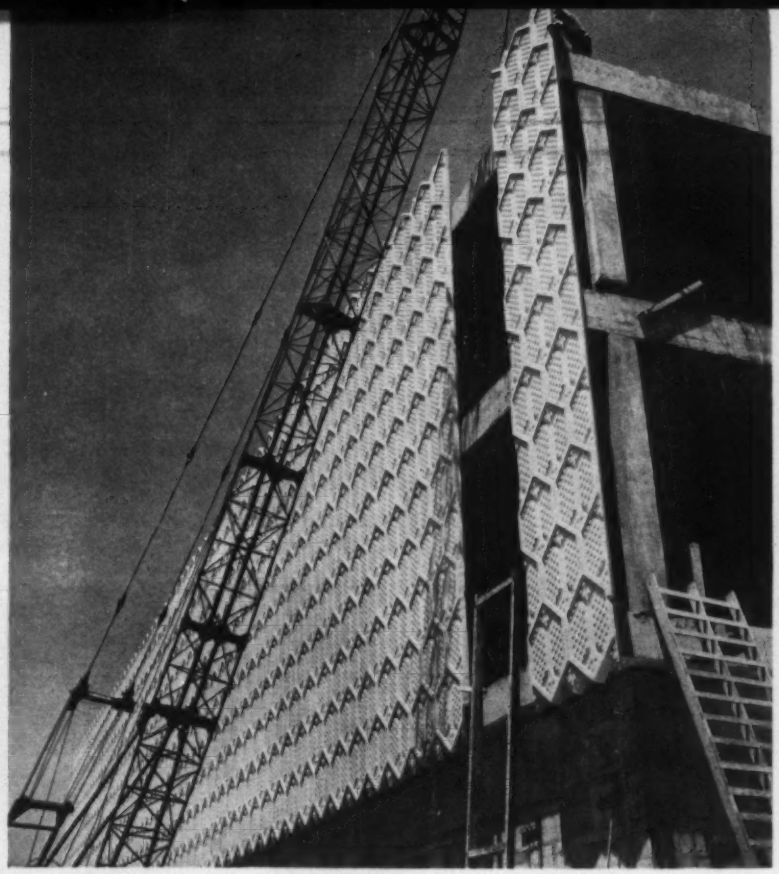
Workmen bolt a simple lifting frame on a . . .



41-ft panel that one crane tips and erects.

Tall Precast Concrete Panels Wall

Panel design was chosen to break up the large flat areas of the store's bulk.



Individual sections, 7½ ft wide, form entire exterior wall.

Department Store

Precast, prestressed concrete panels, 41 ft high but only 4 in. thick, form the exterior walls of the May Department Store at the Mission Valley shopping center in San Diego. Deeply textured, and with an integral gold coloring, they make the store an unavoidable landmark.

With the idea of holding erection costs down by handling large units, the store's designers held panel thickness to a minimum to reduce handling weight. Because of the thin section, each 7½-ft-wide panel was prestressed with ten ⅝-in.-dia strands for added resilience in handling. Even then, the units weighed 7½ tons.

The architects-engineers wanted an unusual facade for the store to mask its necessarily plain bulk. Their thinking: recall in the design the old mission built near the site, try to reduce the building to human scale. The pattern chosen for the facing consists of numerous small, raised hexagons enclosed in large interconnected hexagons raised even more from the matrix.

Design started with a fiberboard mockup. After some experimenting the designers chose a plastic form material as best for casting the deep pattern.

Two separate picking systems were designed for handling the completed panels at the casting yard and on the site. A rectangular steel lifting frame bolted to the panel backs served for yard shifting and trucking. At the site, a single crane lifted the panels with two separate three-part lines—one to each end of the lifting frame. After a panel was tipped vertical with the separate lines, crews shifted the bottom line to eyes set in the top panel edge. This way, the picking frame could be removed and the section set in place without a double move from truck to ground and ground to building.

The building frame is reinforced concrete. Inset anchors at the spandrels hold the panels in place.

The cost of the wall in place is equal to that of an ordinary brick wall designed for the same application, the architects report.

Albert C. Martin and Associates are the architects and engineers for the $4-million department store. General contractor is a joint venture of M. H. Golden Construction Co. and L. E. Dixon Co. The San Diego Prestressed Concrete Co. produced the store's wall panels.

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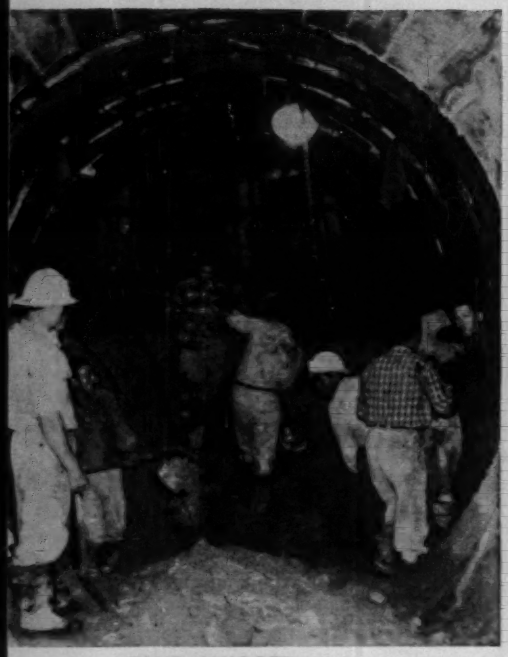


SAND PLUGGED nearly two miles of the 10-mile-long Awali Tunnel.

MULTIPLE ARCH DAM progresses, but poses problem in high central section.

Stalled Litani Project Studied

Electricite de France (EDF), that country's national power authority, has been selected by Lebanon's Litani River Authority (LRA) to restudy present plans for the Litani River hydroelectric and irrigation scheme (ENR Nov. 21, 1957, p. 33) and make proposals on how best to reactivate the construction. Work on the project has been almost at a standstill since flowing sand plugged nearly two miles of the 10-mile Awali Tunnel (ENR Aug. 25, 1960, p. 38).

Not only must means be found to overcome this tunnel difficulty, but questions raised about the design of the project's multiple-arch Karaoun Dam must be resolved. The relatively low arches that constitute the wings of the dam have been built, but the adequacy of the foundation material to support the higher arches required for the central one-third of the structure has been questioned. Substitution of a rockfill for this portion of the dam has been proposed.

Electricite de France was chosen from among 25 international firms which had offered their consulting services for the revision and completion of the project. The Litani River Authority estimates that the first phase of the project will cost $80 million if completed according to present plans. That's $30 million more than was estimated in 1956.

The project consists of the dam on the Litani River in the country's interior Bekaa Valley, and a series of three tunnels to carry its stored water through a range of mountains to irrigate a coastal area along the Mediterranean Sea. On the way, the water will flow through three hydro plants, one of which is nearing the equipment installation phase. However, irrigation rather than power is LRA's preferred priority objective.

EDF is already at work on an on-the-spot study of several alternatives for completing the project with minimum loss of time and funds. If EDF's proposals to salvage the scheme are approved by the LRA and the World Bank, LRA sources say, EDF will be given a contract for the entire engineering, supervision and management of the Litani project. In that case, EDF would probably replace the Groupe Francais du Litani, the consortium of three French engineering firms that has designed and supervised the project so far.

LRA hopes the Litani project can be fully under way again sometime next month. In the meantime, LRA has been making cautious efforts to clear the sand-filled tunnel, and has succeeded so far on a length of about 800 meters.

Wells Sinking City

Mexico City blames subsidence on wells

The mayor of Mexico City has accused the state of Mexico of hydraulically undermining his city. Mayor Ernesto P. Uruchurtu says his city is sinking badly enough due to natural causes, and the "wanton practice of sucking water out from under Mexico City" must be stopped.

The city has restricted future land subdivision for housing in an attempt to stem water use, and the mayor feels this legislation has been quite successful. But the state of Mexico, which completely surrounds the Federal District of which Mexico City is the major part, has set up land subdivisions right across the line within easy commuting distance of the city's downtown area.

Mayor Uruchurtu claims that homebuilders across the border are assured of no water worries by signs reading "abundant water" and huge water fountains that are "spectacularly wasteful."

Although the mayor feels Mexico City has somewhat retarded the 1-ft-a year subsidence rate, he says that if the pumping of groundwater in the whole valley of Mexico, which includes Mexico City and most of the State of Mexico, is not regulated, the city will soon face "an impossible inundation."

As the city sinks, the danger of seasonal flash floods increases. In 1958 the city's Gran Canal, an open sewer, overflowed its banks and inundated much of the town with raw sewage (ENR Oct. 2, 1958, p. 23). Since then sections of the city have receded even further and are now about 16 ft below the level of the canal.

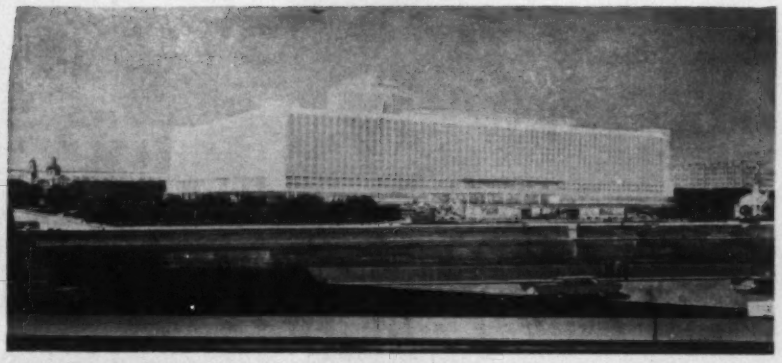
Three Governments Agree To Finance Ottawa Bridge

A $9-million bridge will go up over the Ottawa River between Ottawa, Ontario, and Hull, Quebec, as a result of three-way governmental financing.

Representatives of the Canadian federal government and the governments of Ontario and Quebec agreed to share equally cost of the bridge and its $3-million worth of approaches.

There are only three bridges over the Ottawa River in the Ottawa-Hull area now and only two of these are within the cities.

Consulting engineers named by the three governments will design the bridge. Test borings are already going on at the site, within sight of the Parliament Buildings.



GOING UP: This 3,400-room hotel will overlook the Kremlin.

PLANNED: A new 15-story aluminum and glass-clad wing for a stately old hotel.

Moscow Gets Hotel Minded

When the Soviet Union recently opened its doors to tourists, government officials were shocked to discover that visitors found Moscow hotels sadly lacking in comfort. Apparently attempting to prove that anything the West can do it can do better, Moscow this year is launching a hotel building program.

The Glavmosstory Building Trust has started construction of a 3,400-room hotel that will overlook the Kremlin and the Moscow River. Designed under the direction of architect D. Chechulin, the hotel will be the largest in the Soviet Union, capable of housing 5,890 guests.

The structure will be mostly 12 stories high but will have a 20-story center section. The building will incorporate shops, a motion picture theater and a concert hall seating 3,000, and smaller motion picture theaters seating 1,600. Construction will be of "modern large-panel structural elements" featuring "new building materials."

Only a few blocks away, another hotel project is planned. A new 450-room, 15-story wing will be added to the Hotel National, generally considered to be Moscow's finest. The wing will be connected to the main structure by a glassed-in gallery that can be opened in summertime. Designed by architects at the Mosproekt design office, the building will overlook Gorky Street—Moscow's equivalent of Fifth Avenue. It will feature aluminum panels and glass, according to advance publicity.

One reason for hotel construction is the World's Fair to be held in Moscow in 1967. By that time, new hotels also should be built near the Luzhniki Sports Stadium and in "many other parts of the city."

Most Moscow hotels now used by foreigners were built before the Communist Revolution 43 years ago. Exceptions are the Ukraine and Leningradskaya hotels built within the past few years—but they are of the "wedding cake" architectural design that has gone out of favor.

The new architecture may draw on the Soviets' highly mechanized precast concrete industry for some of its structural elements.

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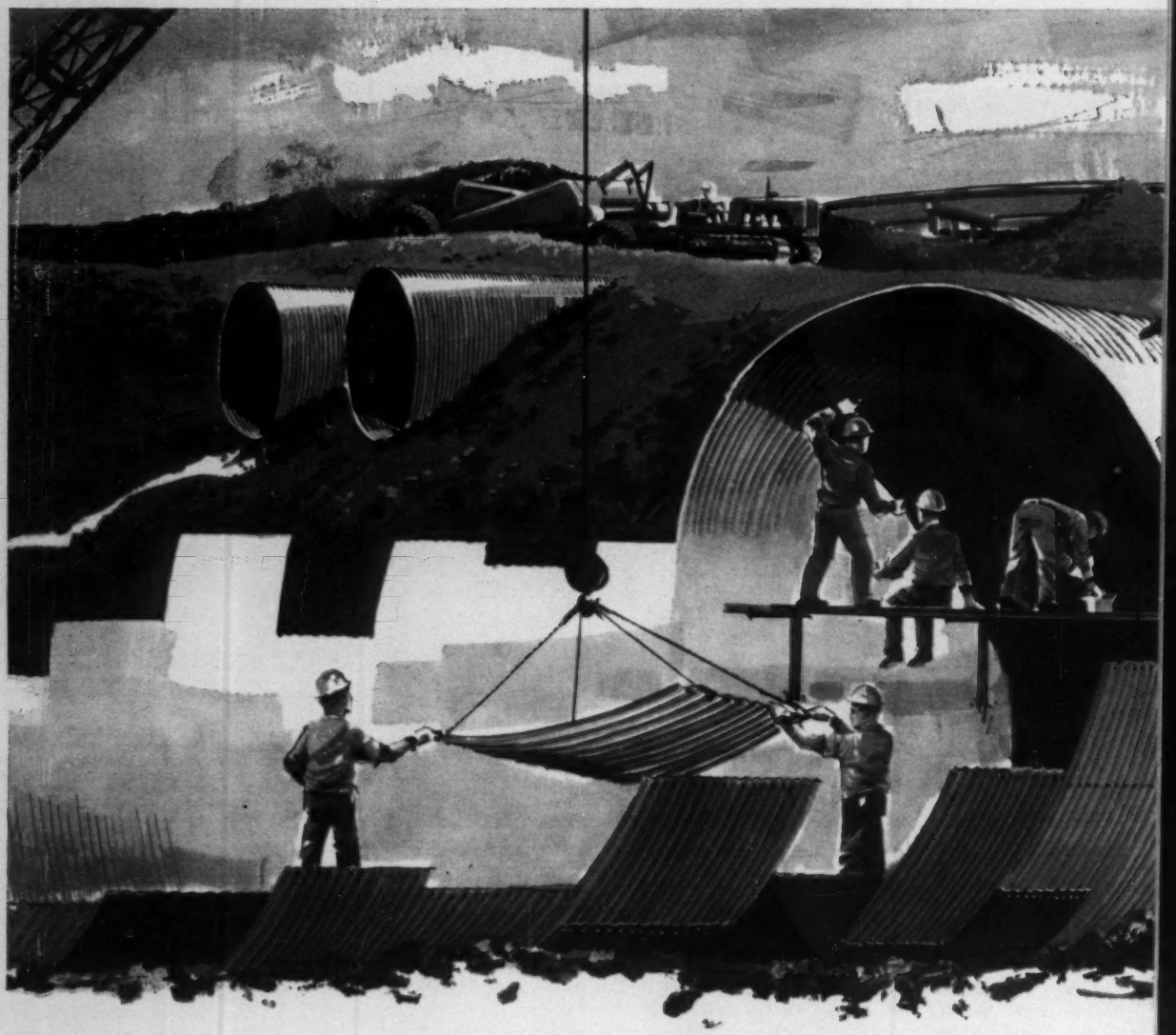

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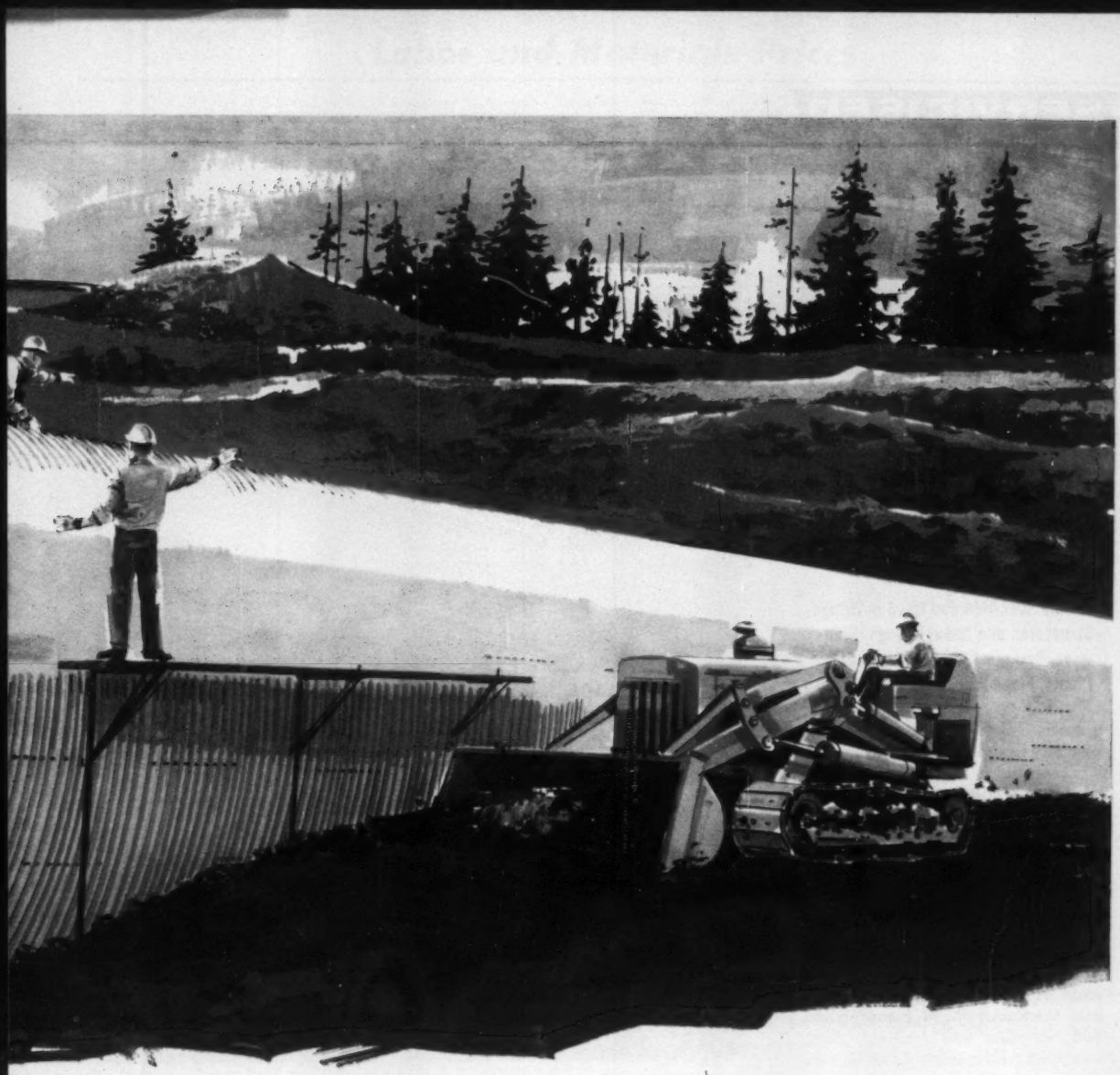

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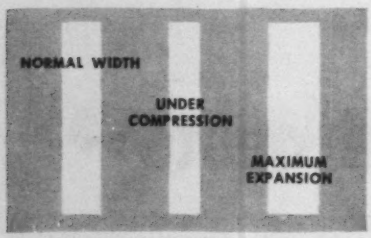

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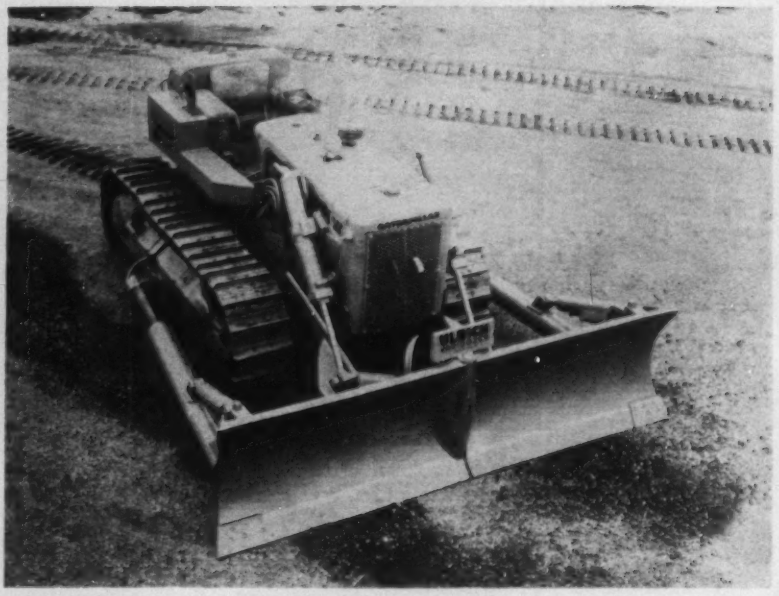
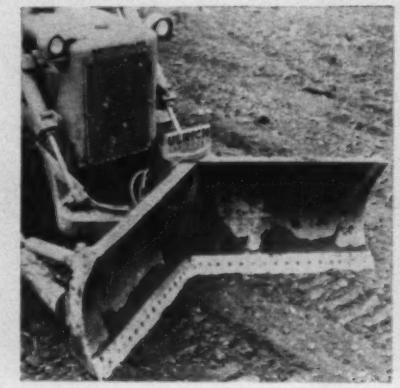


BULLDOZER BLADE, halved by vertical hinge, can be used as a straight pusher, or as . .



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A REVERSE V to pocket material.

Hinged Dozer Blade Is Versatile

A vertical hinge in the center of an otherwise conventional bulldozer blade helps to create an unusual tool for the earthmover. The tool is called the H-6 Varidozer. It is designed for use with a Caterpillar D-6 crawler tractor.

The Varidozer is a hydraulically operated bulldozer attachment that can be used in a variety of ways—as fast as its hydraulic pistons can make the change, the Varidozer can be converted from a straight blade to a forward V, a reverse V, an angle blade, a tilt blade, or any combination of these.

The Varidozer is activated by four cylinders, two for pushing, two for tilting. Controls for the cylinders are four levers mounted within easy reach of the operator. The pushing cylinders, 6 in. in diameter, move the hinged halves of the blade either together, independently or in opposition to each other, to any position from 25 deg forward to 25 deg rearward of a line perpendicular to the longitudinal axis of the machine. And, according to the manufacturer, these changes in position can be made while the tractor is going in either direction and with the blade empty or under a load.

Two 5-in.-dia pistons tip the blade forward or backward up to 10 deg from vertical. In addition, either side of the blade can be raised 56 in. from the horizontal.

The H-6 Varidozer, which weighs about 6,000 lb, is the first of a line of such blades to be built for various sizes of Caterpillar tractors. ULRICH MFG. CO., ROANOKE, ILL.

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Heavy Const.	2.00	2.27+7½	2.05	2.65+10	3.025+7½	2.90	3.285	1.85	2.32	2.90+34	2.63	3.08+10	2.98	2.00	3.55+28	2.55+10	2.725+20	2.925+10	3.045+10	3.00+25	1.75+4	2.00+8
SKILLED BUILDING TRADES																						
Bricklayers	4.00	4.10+15	4.05	4.05+30	4.225+10	4.025+12	4.085+10	4.15	4.00	3.98+33	4.075	4.20+25	3.875+15	3.725+7½	5.00+61	4.25+17	4.50+20	4.25+33	4.40+42½	4.15+30	2.55+6	3.20+13
Carpenters	3.35	3.60+7½	3.23	2.65+10	3.91+20	3.90	4.11	3.50	3.65	3.63+46	3.625	3.825+20	3.65	3.30	4.65+37	3.885+15	4.125+20	3.875+10	3.725+36	3.53+20	2.35+5	2.95+12
Struct. Iron Workers	3.60+7½	4.00+18	3.72+10	4.14+20	4.35+16	3.95+10	4.01+10	3.55+7½	3.71+10	4.00+27½	3.775	4.275+25½	3.62+15	3.60+10	4.95+69	4.45+23	4.30+20	3.875+10	4.275+25	3.76+10	2.55+6	3.05+12
Plasterers	3.50+3	3.85+10	3.37	3.80+45	4.00+27	3.875+1	4.11	3.875+10	3.80+12	3.75+38	3.875	4.25+42½	3.65+33	3.34+5	4.70+67	4.15+20A	4.225+20	4.00+7½	3.79+63	3.72+30	2.65+6	3.20+21
Electrical Workers	4.00+5	3.85+7½	3.65	4.10+25	4.30	4.09+51	4.17	3.625+7½	4.05+47	4.00+52	3.90+43	4.65+46	3.70+44	4.00+7½	4.40+26	4.525+18	4.60+34½	4.11+50	4.22+29	3.95+27	2.45+5	3.52+14
Steamfitters	3.85+22½	3.84+18	3.80+12	3.95+27	4.10+25	4.10+9½	3.91+20	3.70+8½	3.95+10	3.90+49	3.85+9½	4.33+64	3.62+37	3.80+7½	4.65+60	4.20+32	.....	4.275+25½	4.36+72	4.14+29	2.62+6	3.47+13
EQUIPMENT OPERATORS																						
Hoisting Engineers	3.675	4.05+10	3.30	4.05+30	3.90+05	3.80A	4.11	3.65	3.25	3.63+39½	3.57	3.81+20	3.60	3.425+7½	4.90+39	4.345/4.055 +20A	3.73+20	4.00	3.80+35	3.84+20	1.95+4	3.20+13
Tractor Operators (B)																						
34–49 hp	3.15	3.65+10	3.30	3.525+20	3.65+5	3.575+10	3.86	2.625	2.50	3.63+39½	2.875	4.11+20	3.36	3.425+7½	4.275+34	3.63+10	3.72+20	4.00	4.01+35	3.81+20	2.18+5	2.45+10
70–100 hp	3.15	3.65+10	3.30	3.525+20	3.80+5	3.575+10	3.86	2.625	3.10	3.63+39½	3.325	4.11+20	3.60	3.425+7½	4.275+34	3.775+10	3.72+20	4.00	4.01+35	3.81+20	2.18+5	2.55+10
Over 100 hp	3.15	3.65+10	3.30	3.525+20	3.85+5	3.575+10	3.86	2.625	3.10	3.63+39½	3.325	4.11+20	.....	3.425+7½	4.275+34	3.775+10	3.72+20	4.00	4.01+35	3.81+20	2.18+5	2.55+10
Tractor Scraper, 15–16 cy	3.15	3.65+10	3.30	3.525+20	3.85+20	3.575+10	3.86	2.625	3.10	3.63+39½	3.325	4.21+20	3.60	3.425+7½	4.40+35	3.90+10	3.92+20	4.00	4.14+35	3.81+20	2.45+5	2.55+10
Power cranes & shovels																						
½ cy	3.675	4.05+10	3.30	3.90+20	4.25+5	3.575+10	4.11	3.375	3.25	3.63+39½	3.57	4.21+20	3.82	3.425+7½	5.15+41	4.345+10	3.92+20	4.00	4.31+35	4.18+20	2.45+5	3.05+12
¾ cy	3.675	4.05+10	3.30	3.90+20	4.25+5	3.80+10	4.11	3.375	3.25	3.63+39½	3.57	4.21+20	4.08	3.425+7½	5.15+20	4.345+10	3.92+20	4.00	4.31+35	4.18+20	2.18+5	3.20+12
Motor grader operator	3.15	3.20+10	3.30	3.525+20	3.85+5	3.80+10	3.86	2.625	3.10	3.63+39½	3.325	4.21+20	3.36	3.425+7½	4.40	3.875+20	3.92+20	4.00	4.21+35	3.90+20	2.05+5	2.85+11
Air Comp. operator	2.825	3.25+10	2.89	3.45+20	3.70+5	3.80+10	3.735	2.00	3.10	3.63+39½	3.325	3.33+20	3.25	2.72+7½	4.40+35	3.51+20	3.43+20	3.45	3.48+35	3.54+20	2.05+5	2.55+10
Air tool operator	2.22	2.25+7½	2.15	2.80+10	3.85+5	3.80+10	3.735	2.00	2.60	3.03+34	2.675	3.29+10	3.15	2.025	4.00+20	2.55+10 26.60+15	2.60+20	3.45	3.475+10	3.35+10	2.05+5	2.55+10
TRUCK DRIVERS																						
1½ Ton	2.10	2.20+075	2.00	2.70+23	2.68+21	2.65+62½	2.92+15	2.625	2.60	3.03+18	2.555	3.365+10	2.85	3.425+7½	3.275+28	2.45+16	4.20+20	2.93+15	3.79+11	3.40+20	1.75+4	2.05+15
Under 4 cy	2.20	2.20+075	2.20	2.70+23	2.68+21	2.70+6½	2.92+15	2.625	2.75	3.03+18	2.555	3.365+10	2.85	3.425+7½	3.275+28	2.45+15	2.635+30	3.13+15	3.27+11	3.40+20	1.75+4	2.05+15
Over 4 cy	2.45	2.20+075	2.45	2.70+23	2.68+21	2.75+6½	2.92+15	2.625	2.90	3.03+18	2.63	3.555+10	3.00	3.425+7½	3.275+28	2.45+15	2.735+20	3.23+15	3.08+11	3.60+20	1.75+4	2.05+15

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.120, ENR Common Labor Average $2.765 Description of fringe benefits last appeared Sept. 22, 1960. *A 2 drum. *B Including Bulldozers

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles Q	Minneapolis F	New Orleans	New York	Philadelphia H	Pittsburgh	St. Louis HO	San Francisco	Seattle	Montreal	Toronto
GYPSUM BOARD & LATH																						
Plaster board, ½"	$65.00F	$54.00	$63.00H	$60.00mH	$67.50	$53.50wH	$63.00CF	$56.25	$62.50H	$66.00K	$72.00H	$67.00F	$75.00	$57.00H	$65.00H	$54.00	$74.00K	$56–50HO	$60.00	$71.75K	$58.00M	$49.50
" " ⅜"	55.00F	47.50	52.00H	50.00mH	54.50	43.85wH	56.50CF	46.85	51.50H	56.00K	62.00H	60.50F	65.00	52.00H	55.00H	45.00	65.00K	51–56HO	49.00F	59.50K	50.00M	37.25
Board lath, ⅜"	42.50F	35.75	47.77H	35.00mH	45.00	33.05wH	39.00CF	42.50	43.00H	42.45K	45.00H	0.33xF	0.41xL	45.00H	42.50H	36.50	40.00K	40.00HO	0.36xF	51.50K	39/42.00M	41.00L
SHEATHING																						
Gypsum T & G, ½"	68.00F	55.70	75.00H	55.00mH	62.50	51.16wH	58.75CF	56.25	67.00H	66.00K	.....	64.50F	75.00	60.00H	60.00H	52.50	63.00K	67.00HO	61.00F	70.00K	54.00M	70.00
Fiber board, ½", sq. e	72.00F	65.00	67.50H	65.00H	87.00	77.00wH	80.00CF	68.75	62.50H	48.50DK	75.00H	75.00F	95.00	67.00H	78.00	65.00	60.00K	65–75HO	70.00F	68.50K	63.00M	75.00T
" " 25/32", T & G	127.00F	108.50	140.50H	120.00H	123.00	125.00wH	129.00CF	118.00	103.50H	85.65DK	122.00H	125.00F	130.00	140.00H	124.00	115.00	100.00K	115/120	111.00F	71.00K	.....	.....
INSULATION																						
Fiber board, sq. e., ½"	75.00F	69.00	83.50H	79.00hnH	87.00	72.50wH	80.00CF	68.75	77.00	62.50DK	80.00H	80.00F	78.00	80.00H	78.00	65.00	60.00K	75/80	69.00F	71.00K	73.00M	83.00T
Min. wool, loose	1.59z	1.40F	1.40	1.40bH	1.85	1.45wH	1.35	2.00	1.55b	1.45b	1.40H	76.00BeF	2.25y	3.00L	1.55b	1.20	1.25sK	125/135	1.75F	1.25tK	1.35M	1.85
" " 3" batts	70.00F	67.50F	70.00	75.00H	80.00	60.00wH	75H	70.00	65.00ub	52.00	75.00H	83.00F	80.00	70.00*	68.50k	50.00	55.00K	60/70	66.50F	58.00K	60.00M	57.50
Glass fiber, loose	2.00	1.60F	2.00	.....	63/65	1.45wH	.....	1.75	2.00b	1.85b	1.80H	1.35s	2.10	.....	.....	1.40	1.25sk	2.00P	1.75F	1.90*pK	1.35M	.....
" " 3" batts	80.00F	47.00F	65.00	75.00H	5.25j	60.00wH	61.00	70.67	65.00a	80.00	75.00H	64.00	80.00	.....	68.50	50.00	55.00K	67.00	66.50F	51.00*lKh	60.00M	57.50
Aluminum foil, 1 side	4.77qi	4.00F	3.77gG	5.30xH8	.....	3.02jwJ	14.00ioJ	5.00gAG	5.25	.....	3.60d	4.65g	4.25	6.50	4.38iH	2.90	4.25igK	4.39ig	5.10	7.47K	9.00qM	15.50o
" " 2 layers	.....	33.50F	.....	53.50qH	67.50	66.00wJ	55.00J	45.00	48.65	.....	60.00	7.90V	.....	.....	40.00eH	83.50	38.50K	.....	60.00F	39.53EK	56.00M	46.00

*° F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 26# bag. *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 650 sf. *B ton *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F Less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K Less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags. *Q add 4% sales tax *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2606 sq. ft. *V 250 sf roll.

MEXICO CITY WAGES AND PRICES, MARCH, 1961

WAGES, av per week, 8 hr day (pesos) 6 days work-extra day's pay

Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor;	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct, ironworkers	315.00

MATERIAL PRICES, F.o.b. City (pesos

Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1942.10
Reinf. steel, corrugated rods, per ton		
⅜"–½" x 11 meters consolidada		1925.00
¾"–1" x 11 meters		1800.00

Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	255.00
Lumber, 2" x 4" 1st class pine 20 ft	per M sq. ft.	2700.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

Concrete outperforms asphalt on these

The most significant pavement test of all time

Sponsored by the American Association of State Highway Officials, the 27 million dollar National Road Test was directed by the Highway Research Board. Completely impartial, it is the most comprehensive and scientific experiment that has ever been made on concrete and asphalt pavements.

Test sections of concrete and asphalt were built side by side on the same soil, under the same supervision, to designs currently used in various states. Both carried

683 times "around the world"! That's how far trucks traveled over 5 pavement loops

counts . . .

the same traffic at the test site near Ottawa, Illinois.

In two years ending last November 30th, surviving test sections had withstood 1,113,762 load applications. Here is conclusive proof that concrete—for streets, roads and Interstate highways—gives the extra value and retains the riding superiority that pleases taxpayers.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

NATIONAL ROAD TEST GIVES THE EVIDENCE!

1

Concrete is more durable

A count of pavement sections still surviving after two years of test traffic showed *concrete outlasted asphalt 3 to 1.* A dramatic demonstration that concrete gives more for every paving dollar spent.

2

Concrete rides easier

In ratings of how test pavements retained the "rideability" they started with, *concrete beat asphalt by a wide margin.* This confirms again that only concrete can give the lasting smooth ride expected from modern pavements.

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Waterbury** — BA 4/11 — St. Mary's Hospital Corp., 56 Franklin St., HOSPITAL ADDN., Scovill St. $5,000,000. Plans deposit $250. Extended date. Polak & Sullivan, 1397 Chapel St., New Haven, archts. CD 3/3/61.

BUILDINGS—LB & CA

▲† **The Frouge Corp.**, 141 North Ave., Bridgeport, Conn., LB $2,854,800, 180 units CAPEHART HOUSING, Westover Air Force Base, IFB 19-617-61-42, CHICOPEE FALLS, MASS. Base Procurement Office, Westover Air Force Base, Chicopee Falls, Mass. BA 3/16. CD 2/24/61.

▲ **Joseph Rugo, Inc.**, 115 Homes Ave., Dorchester, Mass., LB $2,288,888, REGIONAL HIGH SCHOOL, Nook Rd., PLYMOUTH, MASS. Plymouth-Carver Regional School Dist., Town Office Bldg., Lincoln St., Plymouth, Mass. BA 3/8. CD 2/24/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., New York**—BA 4/5—Dpt. P. Wks., Rm. 2200, Municipal Bldg., Zone 7, Contr. 1, structures and equipment; Contr. 2, ventilating; Contr. 3, plumbing; Contr. 4, electrical work, Rikers Island SEWAGE PUMPING STATION, Hunts Point Pollution Control Proj., Bronx Boro. CD 2/9/60.

BUILDINGS—BA

▲ **N. Y., New York**—BA 4/11—New York City Housing Auth., Rm. 312, 299 Broadway, Zone 7, fdns., general construction, heating, ventilating, electrical work, plumbing work, Rutgers Houses, NYS-80, Madison St., Rutgers St., Cherry St. and Pike St. $8,215,000. Plans deposit $75. CD 3/10/58.

▲ **N. Y., New York**—BA 4/19—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 1A, general construction; Contr. 2A, plumbing; Contr. 3A, heating and ventilating; Contr. 4A, electrical work for Phase 1A, POWER PLANT EXPANSION FACILITIES, Rikers Island Penitentiary, Bronx Boro. Plans deposit $40.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, BRIDGE,
Frederick Snare Corp. & Dravo Corp. 233 Broadway, New York 7, N. Y., CA $5,239,360, Piers, 1, 2, 3 and 7 through 15 of substructure Newburgh-Beacon Bridge over Hudson River, Contract 2, Int. Tr. Rte. 84 NBB 61-1, Orange and Dutchess Counties. BA 3/16/61. CD 3/17/61, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 3/16, BRIDGE,
American Bridge Division of U. S. Steel Corp., 501 John Fitch Way, Trenton, N. J., LB $2,889,000, (5 bidders), superstructure Interstate Rte. 80 bridge over Hackensack River, Bergen Co. CD 2/24/61.

▲ **C. J. Langenfelder & Sons, Inc.**, 8427 Pulaski Hy., Baltimore, Md., LB $3,322,170, South Dam, RV-1, Bid on North Dam, RV-2, $4,278,515 with 3% reduction for both projects, Round Valley Reservoir Project, near Lebanon Boro, Clinton Twp., Hunterdon Co., NEW JERSEY. Dpt. Conservation & Economic Development, 205 W. State St., Trenton, N. J. BA 3/16/61. CD 2/27/61.
Yonkers Contg. Co., 969 Midland Ave., Yonkers, N. Y., LB North Dam RV-2, $4,188,537; Bid on RV-1, $3,361,337, with 2% reduction for both dams (New Jersey).

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 3/17, ROADS,
Pa.—**Latrobe Rd. Constr., Inc.**, P. O. Box 150, Latrobe, Pa., LB $2,987,190, (8 bidders), 34,254 ft. separated hy. RCC 24 ft. wide each side divisor; 5 bridges, T. R. 126, interstate, Fulton Co.;
Pa.—**D. A. Kessler Constr. Co., Inc.**, 124 E. Ave., Mt. Carmel, Pa., LB $2,298,170, (9 bidders), 11,900 ft. divided hy. RC 24 ft. wide each side earth median, 7 bridges (Interstate, Sec. of Pen-Can Hy.), L. R. 1002(3), Monroe Co.;
Pa.—**Jefferson Coal & Constr. Corp.**, Box 440, Canonsburg, Pa., LB $612,663, (7 bidders), 25,799 ft. cr. agg. base hy. with bit. 22 ft. wide, L. R. 62182(4), Washington Co. CD 2/20/61.

▲ **Blount Brothers**, 79 Commerce St., Montgomery, Ala., CA $2,149,128, Potomac River INTERCEPTOR SYSTEM, PUMPING STATION, End of Theodore Roosevelt Bridge, WASH., D. C., D. C. Govt. Dpt. Sanitary Engineering, 499 Pennsylvania Ave. N. W., Wash., D. C. BA 3/3/61. CD 3/7/61, under LB.

BUILDINGS—LB & CA

▲ **John W. Cowper Co. Inc.**, 1945 Sheridan Dr., Tonawanda, N. Y., CA Est. $3,500,000, general contract 350,000 sq. ft. GLASS CONTAINER PLANT, BROCKPORT, N. Y. Owens-Illinois Glass Co., Owens-Illinois Bldg., Toledo, O. CD 1/21/60.

▲ **Mars Assocs., Inc. and Normel Constr. Co.**, 271 Church St., New York, N. Y., LB $2,032,000 general contract PUBLIC SCHOOL 74, 115 St. and 3 Ave., Manhattan Boro, NEW YORK, N. Y. Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. BA 3/16 CD 2/20/61.

▲ **Syndicate** c/o S. J. Kessler & Sons, archts., 551 5th Ave. New York 16, N. Y., Owner Builds, $5,000,000, 21 story, APARTMENT, NW corner 1st Ave. and E. 76th St. NEW YORK, N. Y. CD 6/8/60.

▲ **David O. Evans**, 1445 North Broad St., Hillside, N. J., Owner Builds, $2,500,000, 143,000 sq. ft. PERISHABLE FOODS PLANT, York St., Wakefern Food Co., Elizabeth, lessee; $1,800,000, 163,000 sq. ft. WAREHOUSE, Davis Industrial Park, Mothers Food (Vita Foods) Products, 50 Wheeler Point Rd., Newark, lessee, ELIZABETH, N. J. Herman Kuzel, 232 Walnut St., Dunellen, N. J., archt.

▲ **Catranel Inc.**, 901 Elizabeth St., Pittsburgh, Pa., CA Est. $20,000,000, East Hills APARTMENTS, TOWN HOUSES, COMMUNITY BLDG., Frankstown Rd. and Robinson Blvd., PITTSBURGH, PA. Action-Housing Inc., c/o contractor.

▲ **George A. Fuller Co.**, Munsey Bldg., Wash., D. C., CA $3,000,000, Regional OFFICE BLDG., Connecticut Ave. and R St. N.W., WASH., D. C. Joseph E. Jones, (agent for Mutual of Omaha), Ring Bldg., Wash., D. C. CD 12/2/60.

▲ **Standard Constr. Co.**, 1000 Connecticut Ave. N. W., Wash., D. C., CA $4,270,000, 8 story, 385 unit APARTMENT, 1325 3 St. S. W., CA $2,459,972, 134 town houses, 4th, N and O Sts. River Park S. W., WASH., D. C. Reynolds Aluminum Service Co. of Virginia, 918 16th St. N. W., Wash., D. C. Charles M. Goodman & Assocs., 1018 18th St. N. W., Wash., D. C., archts.

▲ **M. W. Kellogg Co.**, 711 3rd Ave., New York 16, N. Y., CA Est. $17,000,000, design and construct, GLYCERIN PLANT, near WILMINGTON, DEL. Atlas Powder Co., New Murphys Rd., and Concord Park, Wilmington, Del.;
Chemical Constr. Co., 525 W. 43 St., New York 36, N. Y., CA, FACILITIES to SUPPLY HYDROGEN, (Wilmington, Del.).

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Virginia**—BA 4/19—Elizabeth River Tunnel Comn., City Hall, 235 Plume St., Norfolk, Contr. 4, Portsmouth Approach Hy., Second Elizabeth River, TUNNEL and APPROACHES. Plans deposit $35. Parson, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, N. Y., engrs. CD 11/25/59.

BUILDINGS—BA

▲† **Ala., Fort Rucker**—BA 4/27—U. S. Eng., P.O. Box 1169, Mobile, Capehart Family HOUSING, IFB ENG-01-076-61-70B. Approx. $8,000,000. CD 3/9/61.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Dpt. Hys., 1221 E. Broad, Richmond, ROADS,
Va.—**S. J. Groves & Sons Co.**, Simpson Ferry Rd. and Rte. 15, Camp Hill, Pa., CA $1,018,523, grading, paving between 0.66 mi. north Quantico Creek to 1.4 mi. north Neabsco Creek on Rtes. 95 and 1, Contr. 1, Proj. 0095-076-101, G303; 0001-076-104, C501; CA $1,294,836, grading, draining 2.864 mi. Rte. 95, Contr. III, Proj. 0095-076-101, G305, Prince William Co.;
Va.—**Wright Contg. Co.**, Odenton, Md., CA $1,275,102, grading, paving from 0.2 mi. north W&O RR incl. 1 bridge on Rte. 413, Proj. 0413-029-008, C508, B677, B681, B682, Fairfax Co.;
Va.—**Bennie Snyder**, White Sulphur Springs, W. Va., CA $1,433,710, grading, paving from 1.64 mi. north Stafford county line to 0.66 mi. north Quantico Creek on Rte. 95, Contr. I, Proj. 0095-076-101, G302, Prince William Co.;
Va.—**Nello L. Teer Co.**, Trust Bldg., Durham, N. C., CA $1,494,049, grading, paving from 3.54 mi. north Int. Rte. 207 to Spotsylvania county line on Rte. 95, Contr. I, Proj. 0095-016-002, G302, B610, B612, B617, Caroline Co.;
Va.—**H. A. Nunn, Virgilina, Va.**, and **Adams Constr. Co.**, 2725 Roanoke Ave. S.W., Roanoke, Va., CA $655,590, grading, paving from west of Pulaski county line to 0.85 mi. west Rtes. 11 and 100 on Rte. 81, Proj. 0081-098-008, P402; 0081-077-011, P401, Wythe and Pulaski Counties;
Va.—**A. B. Burton Co., Inc.**, Wards Rd., Lynchburg, Va., CA $2,433,490, grading, paving between Rte. 645 (Glenvar) and 0.55 mi. east of Rte. 116 (Hanging Rock), on Rte. 81, Proj. 0081-080-001, G501, G304, B630, B632, Roanoke Co.;
Va.—**Ames & Webb, Inc.**, 3145 Virginia Beach Blvd., Norfolk, Va., CA $1,295,952, grading, paving from Int. 21st St. and Hampton Blvd. to Int. Brambleton and Monticello Aves. on Rte. 599, Contr. I, Proj. 0599-122-101, C501, city of Norfolk Grand total $10,901,252. BA 3/8/61. CA 3/16/61. CD 3/10/61, under LB.

▲ **NORTH CAROLINA**—State Hy. Comn. Capitol Bldg., Raleigh, ROADS,
Asheville Contg. Co., Box 5119 Biltmore Station, Asheville, N. C., CA $2,140,859, grading, CABC, b. conc. binder and surf., structures 7.56 mi. Interstate Rte. 40 from point west of Clyde, northeast to Beaverdam Rd. north of Canton (section of Canton Bypass), Proj. 8.19430, I 4901(7)29, F 16(13), Haywood Co.

▲† **James P. Cross**, 120 Iberia St., New Iberia, La., LB $2,612,227, (12 bidders) LEVEE 29, Section 2, STRUCTURES 12 A, B, C, D, E, 7 and 14, and RELOCATION of U. S. HY. 41 on Crown of levee, Central and Southern Florida Flood Control Project, ENG-08-123-61-54, FLORIDA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. BA 3/14/61. CD 2/17/61.

▲† **Traylor Bros.**, Upper Mount Vernon Rd., Evansville, Ind., LB $8,811,396, est. $10,087,458, (9 bidders) DAM, McAlpine Locks and Dam, Ohio River, KENTUCKY and INDIANA. U. S. Eng., P. O. Box 59, Louisville 1, Ky. BA 3/21/61. CD 3/13/61.

BUILDINGS—LB & CA

▲† **Bush Constr. Co., Inc.**, Flat Iron Bldg., Norfolk, Va., CA $3,313,082, 223 unit Capehart Family HOUSING, improvement and utilities, ENG-44-110-61-14, FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk, Va. BA 2/16/61. CD 2/20/61, under LB.

▲ **Harry B. Graham Co., Inc.**, P. O. Box 47, Ashland, Va., LB $2,473,700, (9 bidders), 4 story, 85,000 sq. ft. steel, masonry 107-bed HOSPITAL, FRANKLIN, VA. Southampton Memorial Hospital, Franklin, Va. BA 3/21/61. CD 3/14/61.

▲ **Doyle & Russell**, Central National Bank Bldg., Richmond, Va., CA $3,874,444, 15 story OFFICES, East Broad St., RICHMOND, VA. State Hy. Dpt., 1221 East Broad St., Richmond, Va. BA 3/8/61. CD 3/10/61, under LB.

▲ **John Volpe Constr. Co.**, 4333 NW 7th Ave., Miami, Fla., LB $3,475,000, (3 bidders), HOSPITAL ADDN., ALTERATIONS, 3501 Johnson St., HOLLYWOOD, FLA. South Broward District Memorial Hospital, 3501 Johnson St., Hollywood, Fla. BA 3/15/61. CD 3/1/61.

▲ **Southern Builders**, 3355 Poplar Ave., Memphis, Tenn., CA $2,739,800, ADMINISTRATION BLDG., for Memphis Park Board and Memphis Education Board, MEMPHIS, TENN. City, City Hall, Memphis, Tenn.

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Janesville**—BA 4/6—Bd. Educ., Janesville, JUNIOR HIGH SCHOOL, $2,750,000. Plans deposit $100. Childs & Smith, Inc., 20 N. Wacker Dr., Chicago, Ill., archt. CD 3/2/61.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 3/14, ROADS,
O.—**V. N. Holderman & Sons Co.**, 890 Oakland Park Ave., Columbus, O., LB $4,775,241, est. $6,322,500, relocating 7 mi. US Rte. 50 from County Rd. 56 in Coolville northeast to existing US Rte. 50 and State Rte. 555 junction, Proj. 95, Athens and Washington Counties;
O.—**Whitaker-Merrill Co.**, 33 N. High St., Columbus, O., LB $282,283, est. $378,700, erecting traffic signs on US Rte. 25 and Interstate 75 in Villages of Evendale, Glendale, Sharonville and Springdale, Hamilton Co., on through Village of Monroe in Butler Co. and Warren Co. and ending at Dayton in Montgomery Co., Proj. 96, Butler, Hamilton, Montgomery and Warren Counties. CD 2/31/61.

▲ **Rocco Ferrare & Co.**, 30105 W. Eight Mile Rd., Detroit, Mich., and **Boam Co.**, 3144 W. Eight Mile Rd., Livonia, Mich., LB $2,140,272, Phase B, Red Run DIVERSION CONDUIT and Mahoning River INTERCEPTOR SEWER, WARREN, O. City, City Hall, Warren, O. BA 3/16/61. CD 3/7/61.
Al Manzo Constr. Co., 109 Rockwood St., Monroeville, Pa., LB $2,246,212, Phase C, Red Run DIVERSION CONDUIT and Mahoning River INTERCEPTOR SEWER (Warren, O.).

▲ **Santucci Constr. Co.**, 5025 Church St., Skokie, Ill., CA $2,382,651, est. $2,400,000, AUXILIARY OUTLET SEWERS, Leamington Ave. System, No. 80.82-61-26, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill., BA 2/28/61, CA 3/16/61. CA 3/7/61, under LB.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Zone 26, Bids opened 3/15, ROADS,
Mich.—**Canonie Constr. Co.**, South Haven, Mich., LB $4,020,380, 6.1 mi. of I-75 from Holcomb Rd. west to M-87, incl. interchanges at M-87 and US-10, 2 mi. west of Clarkston; grade separations Davisburg and Rattlee Lake Rds. and bridge at Deer Lake Creek, Oakland Co. CD 3/9/61.
Mich.—**C. E. Utterback**, 1101 North Franklin, Mount Pleasant, Mich. and **Hertel-Deyo Co.**, 5205 South Division Ave., Grand Rapids, Mich., LB $3,195,950, 6.5 mi. I-75 from M-87 northwest to Evans Rd., incl. interchange at Grange Hall Rd. and grade separations at Belford and Lahring Rds., Oakland Co. CD 3/9/61;
Mich.—**C. J. Rogers**, 14836 Grand River, Detroit 27, Mich. and **Cooke Contr. Co.**, 1116 Penobscot Bldg., Detroit 26, Mich., LB $1,493,555, paving temporary roads for detour, Beaubien St. entrance ramp over Ford Freeway to Chrysler, alterations to Dequindre

Yards bridge, storm water pump house and alterations to utilities, Oakland Co.;
Mich.—**C. J. Rogers,** 14836 Grand River, Detroit 27, Mich. and **Cooke Contr. Co.,** 1116 Penobscot Bldg., Detroit 26, Mich. and **Jutton-Kelly,** 13240 Alber Dr., Dearborn, Mich., LB **$1,602,306,** Ford-Greenfield Interchange, Ford Rd., Dearborn, Oakland Co.;

▲† **Merritt Chapman & Scott Corp.,** 1648 Standard Bldg., Cleveland 13, O., LB **$2,560,000,** (4 bidders), DREDGING Course 1, Bayfield Channel, St. Mary's River, Sault Ste. Marie, Chippewa Co., Mich., CIVENG 20-064-61-39, MICHIGAN and ONTARIO. U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. BA 3/14. CD 2/14/61.

▲ **S. A. Healy Co. & Gargaro Co.,** 6561 E. Seven Mile Rd., Detroit 34, Mich., CA **$4,373,000,** Contrs. PW-3069 and PW-3070, Schoolcraft RELIEF SEWER, Sections 1 and 2, Rouge River to Hubbell Ave., DETROIT, MICH. City, 528 City-County Bldg., Detroit 26, Mich. BA 2/21, CA 3/16. CD 3/16/61, under LB.

▲ **S. A. Healy Co. & Gargaro Co.,** 6561 E.7-Mile Rd., Detroit 34, Mich., CA **$3,545,342,** 19,100 ft. TUNNEL DRAIN, 8-Mile Rd. from Greenfield Rd. to Rouge River, Southfield and Oak Park, PONTIAC, MICH. Oakland Co. Drain Comn., 550 S. Telegraph Rd., Pontiac, Mich. CA 3/9, CD 2/8/61, under LB.

BUILDINGS—LB & CA

▲ **Production Builders,** c/o William Luft, 144 Laura Dr., Columbus, O., CA Est. **$3,500,000,** first section, 300 HOMES, Madison Terrace, Alum Creek Dr., OBETZ (BR. COLUMBUS), O. CD 2/20/61.

▲ **Golden Manor Homes, Inc.,** c/o Krilich Builders, Inc., 5906 N. Milwaukee Ave., Chicago, Ill., Owner Builds, **$4,000,000,** 179 HOMES, Elmhurst Rd., south of Golf Rd., DES PLAINES, ILL.

MISSISSIPPI TO ROCKIES

BUILDINGS—BA

▲† **Neb., Fort Crook**—BA 4/6—Base Procurement Office, Offutt Air Force Base, 500 Capehart Act Family DWELLINGS, IFB-25-600-61-70. $8,000,000. Plans deposit $100. Henningson, Durham & Richardson, Inc., 2962 Harney St., Omaha, archt.-engr. CD 11/15/60.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, ROADS, Mo.—**R. B. Potashnick & D. L. Harrison Co.,** Box 423, Cape Girardeau, Mo., CA **$2,365,635,** grading, culverts, conc. pavts., 6.27 mi. Cape Girardeau Co., CA **$2,575,514,** grading, culverts, conc. pavts., 6.988 mi., Cape Girardeau Co.;
Mo.—**Fosco Fabricators, Inc.,** 231 S. LaSalle St., Chicago, Ill., CA **$530,769,** signing-Mark Twain Expressway, St. Louis Co. Grand total $5,471,918. BA 2/24/61, CA 3/1/61. CD 3/6/61, under LB.

▲ **Hawkins Constr. Co., and Tolboe and Harlin of Wyoming,** 2515 Deer Park Blvd., Omaha, Neb., CA **$8,841,613,** Missouri River SEWAGE TREATMENT PLANT, 65 mgd capacity, OMAHA, NEB. City, City Hall, Omaha, Neb. Henningson, Durham & Richardson, 2962 Harney, Omaha, Neb., engrs. BA 2/28/61, CA 3/7/61. CD 3/2/61, under LB.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas Ave., Denver, BRIDGES,
H-E Lowdermilk Co., 1950 W. Dartmouth Ave., Denver, Colo., CA **$3,444,934,** est. $3,332,509, steel suspension bridges, grading, stabilization, minor structures, approx. 6.432 mi., Proj. No. C 40-006-26, Gunnison Co. BA 3/14/61, CA 3/15/61. CD 3/16/61, under LB.

BUILDINGS—LB & CA

▲ **J. W. Bateson Constr. Co. Incorporated,** 10130 Monroe Drive, Dallas, Tex., CA **$8,500,000,** general contract 23 story HEADQUARTERS and OFFICE, DALLAS, TEX. Southwestern Bell Telephone Co., 308 S. Akard, Dallas, Tex. BA 3/1/61. CD 2/8/61.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Alaska, Barter Air Force Station**—BA 4/13—U. S. Eng., P.O. Box 7002, Anchorage, Alaska, TROPOSPHERIC COMMUNICATIONS FACILITIES, Barter Island and Fort Yukon Air Force Stations, INV 61-35. $5,000,000.

BUILDINGS—BA

▲ **Calif., San Diego**—BA 4/26—State Div. Architecture, 107 S. Broadway, Los Angeles, 6 story, bsmnt., 179,500 sq. ft. GENERAL OFFICE BLDG., for State Dpt. Finance, W.O. 3848GC5. $2,740,000. Plans deposit $175. CD 12/5/58.

HEAVY CONSTRUCTION—LB & CA

▲† **Gibbons & Reed Co.,** Box 2429, Salt Lake City, Utah, LB **$2,830,416,** est. $1,583,565, EARTHWORK and structures, Willard Canal, Station 1 plus 86 to Station 430 plus 00, Weber Basin Proj., near Ogden, Box Elder and Weber Counties, Spec. No. DC 5500, UTAH. Bureau Reclamation, Dpt. Interior, Ogden, Utah. BA 3/16. CD 2/8/61.

▲ **ARIZONA**—State Hy. Dpt., 206 S. 17th Ave., Phoenix, Bids opened 3/17, ROADS,
The Ashton Co., Inc., P. O. Box 7065 Tucson, Ariz., LB **$2,480,659,** est. $2,693,100, (9 bidders), grading, select material, aggregate base, b. conc. emulsified asphalt seal coat, construct four 3 span

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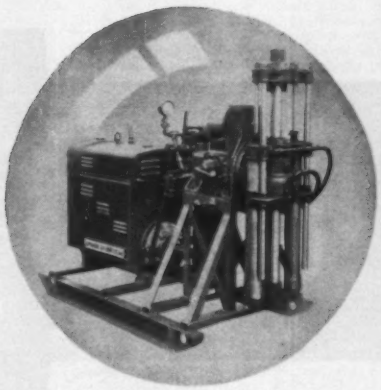

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rein.-con. slab overpasses, Proj. I-10-6(18) 368 beginning about 3 mi. east Bowie on State Rte. 86, extending southeasterly over new alignment State Rte. 86, approx. 4 mi. toward San Simon, Proj. I 10-6 (25)372 beginning east end Proj. I 10-6 (18)368 extending southeasterly over new alignment State Rte. 86 approx. 4.2 mi. toward San Simon, Item No. 208, AFE 8686, Benson-Steins Pass Hy., Cochise Co., LB $1,173,880, est. $1,300,444, (8 bidders) grading, select material, aggregate base, b. conc. emulsified asphalt seal coat, construction four 3-span rein.-con. slab overpass structures, one 2 span steel girder pedestrian overpass structure, beginning Aztec on U. S. Rte. 80 extending northeasterly over U. S. 80 to Yuma Maricopa Co. line approx. 7⅓ mi. I 8-1(8)73, Yuma Casa Grande Highway, Yuma Co. CD 3/7/61.

▲† **Abbett Electric Corp.**, 85 Federal St., San Francisco, Calif., LB **$4,520,303**, (4 bidders), FOUNDATIONS, FURNISHING, ERECTING STEEL TOWERS for Glen Canyon-Four Corners 230 kv transmission lines, Colorado River Storage Project, DC 5494, ARIZONA, Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 3/22, BRIDGES,
Guy F. Atkinson Co., 10 West Orange Ave., South San Francisco, Calif., LB **$2,634,040**, est. $2,500,000, (4 bidders), substructure 1,500 ft. toll bridge connecting San Pedro and Terminal Island, Los Angeles Harbor, Los Angeles Co. CD 2/14/61.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 3/16, ROAD,
Fredericksen & Kasler, Gordon H. Ball, Gordon H. Ball, Inc., and R. M. Price, 212-13th St., Sacramento, Calif., LB **$4,451,114**, (3 bidders), grading, paving 3.5 mi. four lane freeway Newport Freeway (State Sign Rte. 55) between ½ mi. south of Santa Ana Freeway and 1/10 mi. south of Chapman Ave., Orange Co. CD 2/1/61.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, ROAD,
Fredrickson & Watson Constr. Co., Jack L. Adams Constr. Co. and Wade G. Ellis Constr. Co., 45-561 Oasis St., Indio, Calif., CA **$3,126,262**, freeway on San Diego Freeway between Artesia Blvd., in Torrance and 0.3 mi. west of Hawthorne Blvd. in Lawndale, Los Angeles. BA 3/9/61. CD 3/15/61, under LB.

▲ **Walsh Constr. Co.**, 115 E. 5th Ave., San Mateo, Calif., CA, 4,407 ft. POWER HOUSE PENSTOCK at Stanislaus Hydroelectric Plant, Tuolumne Co., CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco 6, Calif. CD 1/20/61, under CA.

BUILDINGS—LB & CA

▲ **Andersen-Westfall Co., Inc.**, 3427 NE Halsey St., Portland, Ore., LB **$6,368,054**, 17 story STANDARD PLAZA OFFICE, downtown PORTLAND, ORE. Standard Insurance Co., Standard Insurance Bldg., Portland, Ore. BA 3/16/61. CD 2/1/61.

▲ **Crown Constr. Co.**, 5059 W. Pico Blvd., Los Angeles, Calif., LB **$2,296,440**, (8 bidders), West HIGH SCHOOL, First Increment, TORRANCE, CALIF. Torrance Unified School Dist., 2335 Plaza Del Amo, Torrance, Calif. Roy Donley & Associates, 8320 Melrose Ave., Los Angeles, Calif., archts. BA 3/16/61. CD 2/23/61.

▲ **Pacific Co. Engineers & Builders, Inc.**, 801 Cedar St., Berkeley, Calif., CA Est. **$5,565,000**, 17 story APARTMENT, Fontana West, SAN FRANCISCO, CALIF. Albert-Lovett Co., 3133 Polk St., San Francisco, Calif.

▲ **Steed Bros.**, 714 Date Ave., Alhambra, Calif., CA **$2,306,850**, concrete, stucco HOSPITAL, 1115 S. Sunset, WEST COVINA, CALIF. West Covina Community Hospital Assn., P.O. Box 84, West Covina, Calif. BA 1/27/61. CD 1/13/61.

CANADA

BUILDINGS—BA

▲ **Ont., Owen Sound**—BA 4/12—Dpt. P. Wks., Parliament Bldgs., Queens Park, Toronto, MENTAL HOSPITAL, consisting 1 story, cottages, 2 story wings and 2 story administration bldg. $3,500,000. Extended date. CD 3/6/61.

BUILDINGS—SLC

▲ **N. S., Halifax**—Webb & Knapp (Canada) Ltd., 1010 St. Catherine St. W., Montreal, Que., soon lets contract, 400,000 sq. ft. rein.-con. frame, 50 store, mall-type REGIONAL SHOPPING CENTER, incl. 3 story department store, Bayers and Mumford Rds., $9,000,000. John Graham, 2 Carlton St., Toronto, Ont., archt. Keith L. Graham & Assocs., 53 Spring Garden Rd., Halifax, assoc. archt. CD 3/6/61.

HEAVY CONSTRUCTION—LB & CA

▲ **J. A. Jones Constr. Co. (Canada) Ltd.**, 277 Slater St., Ottawa, Ont., LB **$3,775,000**, SEWERAGE, main bldg., marine outlet sewer, elevator water tower fdn., raw water pumping station, South Bank Ottawa River, OTTAWA, ONT. City, City Hall, Ottawa, Ont. James F. MacLaren Assocs., 321 Bloor St. E., Toronto, Ont., engrs. CD 3/6/61;
Mitchell, Upjohn & Co., Ltd., 234 Eglinton Ave. E., Toronto, Ont., LB **$243,315**, four RAW SEWAGE PUMPING UNITS, sewerage project, South Bank Ottawa River, (Ottawa, Ont.).

▲ **Bedford Constr. Co., Ltd.**, Brydon Dr., Rexdale, Ont., CA **$8,297,950**, EARTH EMBANKMENT, part of South Saskatchewan River Dam, Contract 13, near Hillspring, Alta., SASKATCHEWAN Prairie Farm Rehabilitation Admin. Motherwell Bldg., Regina, Sask. BA 1/18/61. CD 1/26/61, under LB.

BUILDINGS—LB & CA

▲ **Fluor Corp. of Canada Ltd.**, 160 Bloor St. E., Toronto, Ont., CA Est. $4,300,000, SULPHUR PLANT EXTENSION, CARSTAIRS, ALTA. Home Oil Co., Ltd., 304 6th Ave. W., Calgary, Alta.

PUERTO RICO

BUILDINGS—BA

▲ **Puerto Rico, Rio Piedras**—BA 4/12—Puerto Rico Urban Renewal & Housing Admin., P. O. Box 397, Rio Piedras, 40-unit incl. 42 rein.-con. PUBLIC HOUSING, Proj. PR3-105. $3,000,000. Schimmelpfennig, Ruiz & Gonzalez, Inc., Montserrate Bldg., Rio Piedras, Puerto Rico, archts. CD 11/23/60.

BUILDINGS—LB & CA

▲ **Danco Builders, Inc.**, Box 805, Bayamon, Puerto Rico, CA Est. $8,000,000, 3rd Phase, Santa Juanita RESIDENTIAL DEVELOPMENT, 1,600 rein.-con. HOMES, BAYAMON, PUERTO RICO. Bayamon Hills Corp., Box 805, Bayamon, Puerto Rico. William Thun-Cond. San Martin 305, Stop 23, Santurce, Puerto Rico, archts.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Badger (France) S. a R.L.**, 79th Ave., Champs Elysees, Paris, France and **Badger N.V.**, The Hague, Netherlands, (affiliates of Badger Mfg. Co., 230 Bent St., Cambridge, Mass, U.S.A.), CA Est. $12,000,000, design and construct 10,000 ton per year specialty RUBBER PLANT, STRASBOURG, FRANCE, Polymer Corp. (SAF) Paris, France, sub. Polymer Corp. Ltd., S. Vidal St., Sarnia, Ont., Canada).

FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ **Osman Ahmed Osman Industrial Engineering Co.** and **Misr Concrete Works & Contracting Co.**, Cairo, Egypt, CA Est. $44,200,000, EXCAVATION, LINING HEADRACE and TAILRACE, upstream and downstream cofferdams, EGYPT. Supreme High Dam Committee, Cairo, Egypt. CD 12/14/45.

PROPOSED PROJECTS

STREETS AND ROADS

▲ **MASSACHUSETTS** — Commonwealth Mass., Dpt. P. Wks., 100 Nashua St., Boston, ROAD, **Springfield**—1.5 mi. link Interstate Rte. 91, Springfield to Longmeadow. $17,000,000. Bids April-May 1961.

EARTHWORK. WATERWAYS

▲ **Connecticut**—State P. Wks. Dpt., 165 Capitol Ave., Hartford, FLOOD CONTROL, Hurricane Protection Dike System, New London, $3,000,000.

AIRPORTS

▲† **Calif., Castle Air Force Base**—Base Procurement Office, Bldg. T-708, Castle Air Force Base, plans by Walter Wagner & Partners, archts.-engrs., 20 and N Sts., Merced, Title II, MODIFICATION WHERRY HOUSING, Castle Air Force Base.

▲ **B. C., White Rock**—Semiahmoo Development Co., 1027 W. Broadway, Vancouver, plans by Scott, Furnadjieff & Johnstone, 1027 W. Broadway, Vancouver, AIRPORT and RECREATIONAL CENTRE on 450 acre site, airport for small craft, ranch and country club, nine-hole golf course, shopping centre and residential area, South Surrey Dist. $10,000,000.

▲ **Newfoundland, Gander**—Newfoundland Dpt. Health, Parliament Bldgs., St. Johns, Dpt. Health & Welfare, Jackson Bldg., Ottawa, Ont. and Dpt. Transport, Hunter Bldg., Ottawa, Ont., HOSPITAL, Gander International Airport, $3,000,000.

PUBLIC BUILDINGS

▲ **Ala., Huntsville**—Huntsville Housing Auth., Huntsville, 600 low-rent HOUSING UNITS. $6,000,000. CD 3/19/57.

▲ **Calif., Los Angeles**—Los Angeles Co., 500 W. Temple St., plans by Welton Becket & Assoc., 10000 Santa Monica Blvd., Los Angeles, Calif., MUSIC CENTER, THEATRE and FORUM, Memorial Pavillion Civic Center, First, Hope, Temple Sts., Grand Ave. Revised Est. $23,645,000. CD 11/15/60.

▲ **Calif., Point Mugu**—Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego, plans by Hugh Gibbs & Assoc., 441 E. First St., Long Beach, 200 units CAPEHART HOUSING. $3,300,000. CD 11/15/60.

▲ **Ky., Owensboro**—Municipal Utilities, 1500 E. 4 St., STEAM GENERATING POWER PLANT. $30,000,000.

▲ **La., Hammond**—State Bond & Bldg. Comn., Capitol Bldg., Baton Rouge, MENTALLY RETARDED HOSPITAL. $3,000,000.

▲ **La., New Orleans**—New Orleans Housing Auth., City Hall, preliminary plans by Mathes Bergman & Assocs., 929 Howard, New Orleans, La., low-rent HOUSING, Donner Canal, Whitney Ave., Hendee St., Algiers. $15,396,835. CD 9/23/58.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, plans by Arthur G. Poletta, c/o owner, Proj. E-546, JUNIOR HIGH SCHOOL 68, Flatlands Ave. and E. 82 St. $3,400,000. CD 1/9/61.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island, Zone 1, plans by Arthur G. Poletta, c/o owner, Proj. E-498, JUNIOR HIGH SCHOOL 78, Island Ave. and E. 68 St. $3,400,000. CD 1/9/61.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, plans by Arthur G. Poletta, c/o owner, Proj. E-799, PUBLIC SCHOOL 276, Ave. K and E. 82 St. $2,500,000. Constr. 1961. CD 5/23/57.

▲ **N. Y., Flushing**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, plans by Arthur G. Poletta, c/o owner, Proj. E-516, PUBLIC SCHOOL 21, 149 St. and 26 Ave. $2,895,000. Constr. 1961. CD 1/25/60.

▲ **N. Y., Flushing**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, plans by Arthur G. Poletta, c/o owner, Proj. E-502, Central Queens HIGH SCHOOL, vicinity Main St. and Horace Harding Blvd., Queens Boro. $7,000,000. CD 12/6/60.

▲ **N. Y., New City**—Clarkstown Central School Dist. 1, Carnsmar Lane, voted $4,712,000 bonds Mar. 11, GRADE SCHOOL, Laurel Rd. $1,092,500; JUNIOR HIGH SCHOOL, Parrot Rd. $2,693,500; SENIOR HIGH SCHOOL addn. $754,000; defeated $127,000 bonds Mar. 11, SCHOOL BUS GARAGE. CD 2/17/61.

▲ **N. Y., New York**—New York City Housing Auth., 299 Broadway, Zone 7, Proj. NY-5-62, 1,700 units low-rent HOUSING, Polo Grounds site, 17 acres bounded by Highbridge Park, Colonial Park Houses, W. 155 St. and Eighth Ave. $29,750,000. Constr. late 1962.

▲ **N. Y., Ozone Park**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City Zone 1, plans by Arthur G. Poletta, c/o owner, Proj. E 542, JUNIOR HIGH SCHOOL 202, North Conduit Ave. and 149 Ave., Queens Boro. $3,600,000. CD 12/6/60.

▲ **O., Cincinnati**—University of Cincinnati, Clifton Ave., plans by Potter, Tyler, Martin & Roth, 128 East 6th St., and Garber, Tweddel & Wheeler, St. James Pl., 12 story, bsmnt., concrete, steel WOMEN'S DORMITORY and DINING HALL, University of Cincinnati, campus. $5,500,000. Ziel, Blossom & Assocs., 128 East 6th St., consult. engrs. CD 4/22/60.

▲ **O., Cleveland**—City, City Hall, plans by Outcalt Guenther & Van Buren, 13124 Shaker Sq., Zone 20, Underground EXPOSITION HALL, $10,000,000. Barber, Magee & Hoffman, 1900 Euclid Ave., Cleveland, O. struct. engrs. McGeorge, Hargett & Hoag, 7016 Euclid Ave., Cleveland, O., mech.-elect. engrs. CD 12/5/60.

▲ **Ore., Portland**—Housing Auth. of Portland, 8920 N. Woolsey Ave., plans by Don Byers, 1620 S.E. Ankeney St., 13 story APARTMENT. $3,000,000. Bids about 6/1/61.

▲ **Tenn., Memphis**—City of Memphis and Shelby Co., plans by Merrill G. Ehrman, U.P. Natl. Bank Bldg., 12,000 seat COLISEUM at the fairgrounds, $6,000,000-$10,000,000. CD 12/2/57.

▲† **Tenn., Memphis**—Dist. P. Wks. Office, 6th Naval Dist., Charleston, S. C., plans by Thos. F. Faires & Assocs., 1027 Falls Bldg., 250 units Capehart HOUSING, Naval Air Station. $4,125,000. CD 7/22/60.

▲ **Tex., Dallas**—Dallas County, Comrs. Court, Courthouse, plans by Brown & Nelson, 1327 Merc. Dallas Bldg., Jack Corgan, Jameson & Merrill, 820 N. Harwood St., and Smith & Warder, 206 NW 2nd St., Grand Praire multi-story COUNTY COURTHOUSE. $5,000,000. CD 10/7/60.

▲ **Tex., El Paso**—El Paso Housing Authority, Bd. Directors, City Hall, plans by Fitch & Garrison, 4101 San Jacinto St., Houston, and Nesmith & Lane, 939 Sand Hills St., El Paso, archts.-engrs., 330-unit HOUSING PROJECT FOR ELDERLY. $5,000,000. CD 7/5/60.

▲ **Wash., Seattle**—Housing Auth., King County, Lyon Bldg., plans by D. N. McDonald & Assocs., 719 2nd Ave., 200-unit LOW-RENTAL HOUSING, White Center-Lakewood area. $2,500,000.

COMMERCIAL BUILDINGS

▲ **Fla., Ruskin**—Clarkson Development Corp., c/o Thomas P. Heritage, archt., 4802 N. Armenia Ave., Tampa, APARTMENT DEVELOPMENT, Bahia Beach Blvd. $4,000,000. Bids Spring 1961.

▲ **Fla., St. Petersburg**—Radice Constr. Corp., 10 Franklin Ave., White Plains, N. Y., plans by Gerber & Pancani, 11 Commerce St., Newark, N. J., 2 high rise 232 unit APARTMENTS, Pinellas Pt. Section, $5,000,000.

▲ **Fla., St. Petersburg**—St. Anthonys Hospital Assn., 600 11th St. N., 150-bed HOSPITAL ADDN., Approx. $2,000,000-$3,000,000.

▲ **Hawaii, Honolulu**—Peoples Investment Co., 90 North King St., Philippine CULTURAL CENTER, Kapiolani Blvd. $5,000,000. Bids soon.

▲ **Kan., Great Bend**—Central Kansas Medical Center, Community Hospital Assoc. Inc., 3623 Broadway, plans by Shaver & Co., 205½ So. Santa Fe, Box 1118, Salina, Kan., and James A. Hamilton Assocs., hospital consult., 425 Harvard St. S. E., Minneapolis 14, Minn., 4 story, part 5 story 122,679 sq. ft. rein.-con. masonry air-conditioned MEDICAL CENTER, main bldg. $2,750,000. J. R. DeRigne & Assocs., 4610 J. C. Nichols Parkway, Kansas City, Mo., mechanical engrs. Bob D. Campbell, 4149 Penn, Kansas City, Mo., structural engr. CD 7/14/60.

▲ **Mich., Detroit**—Owner, c/o Hubbard Assocs. (agents) 902 Ford Bldg., Zone 26, plans by Theodore Rogvoy, 929 Fox Bldg., Zone 1, 220,000 sq. ft. SHOPPING CENTER and 2,000 CAR PARKING, Conner Ave. near E. Warren. $3,500,000. Constr. may begin in sixty days.

▲ **N. J., Newark**—Radice Constr. Co., 10 Franklin Ave., White Plains, N. Y., plans by George J. Sole, 347 East 52nd St., New York 22, N. Y., 14 story, 105 unit APARTMENT, Mount Prospect Towers II, Mount Prospect Ave. $2,500,000. Constr. Late 1961.

▲ **N. Y., Elmhurst**—Irving Gordon & Assocs., c/o Wechsler & Schimenti, archts., 118 E. 25 St., New York, Zone 10, 8 story, 258 unit rein.-con. HOTEL OASIS, swimming pool, garage, Queens Midtown Expressway and Woodhaven Blvd. $5,000,000. Bids May 1961.

▲ **N. Y., New York**—George Engler & Samuel Seaver, 425 Park Ave., Zone 22, plans by Emery Roth & Sons, 400 Park Ave., Zone 22, 15 story, 100 x 120 ft. APARTMENT, 10-20 E. 70 St. between 5 and Madison Aves. $2,500,000. Constr May 1. CD 8/25/60.

▲ **N. Y., New York**—Inwood Gardens, c/o Vermilyea Brown Constr. Co., 100 E. 42 St., Zone 17, 218 unit Inwood Gardens APARTMENT, northside Fairview Ave. west of St. Nicholas Ave. $4,059,230.

▲ **N. Y., New York**—Inwood Tower, Inc., 1860 Broadway, Zone 23, plans by Brown & Guenther, 1860 Broadway, Zone 23, 22 story, 169 unit APARTMENT, parking lot, 1-11 Fairview Ave. $3,404,000. To go ahead 1961. CD 2/15/61.

▲ **N. Y., Ossining**—Radice Constr. Corp., et al., 10 Franklin Ave., White Plains, plans by S. J. Kessler & Sons, 598 Madison Ave., New York, Zone 22, 102 GARDEN APARTMENTS. $2,500,000. Constr. late 1961.

▲ **N. C., Rocky Mount**—R. D. Gorham, Jr., 1004 Cokey Rd., 300,000 sq. ft. SHOPPING CENTER. $3,000,000.

▲ **O., Vandalia**—Concept Homes, 305 S. Main St., Dayton, Zone 2, 300 HOMES, Heather development, $5,000,000.

▲ **Pa., Bala Cynwyd**—Martin M. Decker, 45 Monument Rd., plans by Aaron Colish, 117 S. 17th St., APARTMENT, STORES, swimming pool, underground parking, Presidential Blvd. $10,000,000. Bids Summer 1961.

▲ **Pa., Phila.**—Alvin and Philip Brookman, 2601 Parkway, plans by Aaron Colish, Archts. Bldg., 16 story, OFFICE, 16th and Arch Sts. $4,000,000. Bids late Spring 1961.

▲ **Tenn., Madison**—Memorial Hospital, Inc., Madison, plans by Donald Cowan & Associates, 3813 Hillsboro Rd., Nashville, HOSPITAL. $3,000,000. Ellers & Reaves, 414 Falls Bldg., Memphis, structural engrs.

▲ **Tex., Dallas**—Raymond D. Nasher & Associates, Republic National Bank Bldg., SHOPPING CENTER, $10,000,000; hard paved 7000 car PARKING CENTER, $225,000; AREA GROUNDS, GRADING, DRAINAGE, FILLING, $200,000, above work on Central Expressway, Northwest Hy.

▲ **Tex., Houston**—Gulf Interstate Co., 1125 Brazos St., 12 story, basmnt., OFFICE, Dallas, Smith, Brazos and Lamar Sts. $2,500,000.

▲ **Tex., Houston**—Owner, c/o 3110 Eastside St., plans by Jas. T. Swanson, 3110 Eastside St., 12 story, bsmnt., 170,000 sq. ft., rein.-con., frame, glass OFFICE, SW Sect. City, $2,500,000. Walter P. Moore, 2 Pinedale St., Cooke and Holle, 1951 Richmond St., Houston, consult. engrs. CD 3/6/61.

▲ **Tex., Houston**—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, multi-story division and area headquarters OFFICE, Main, Travis, Elgin and Rosalie Sts. $2,500,000. CD 4/14/60.

INDUSTRIAL BUILDINGS

▲ **Ind., Lawrenceburg**—Indiana & Michigan Electric Co., 2101 Spy Run Ave., Fort Wayne, 580,000 kw STEAM-ELECTRIC PLANT, 4th Unit, Tanners Creek Plant. $73,000,000. American Electric Power Service Corp., 2 Broadway, New York 8, N. Y., consult. engrs. Constr. Summer 1961.

▲ **West Virginia**—Virginia Electric & Power Co., 7th and Franklin Sts., Richmond 19, Va., STEAM GENERATING ELECTRIC PLANT EXPANSION, 143 ft. high DAM. $150,000,000. Stone & Webster Engineering Corp., 49 Federal St., Boston, Mass., consult. engrs.

PUERTO RICO

▲ **Puerto Rico, Dorado**—George Silas, c/o Leo Kornblath, archt., 18 E. 41 St., New York 17, N. Y., 204-room rein.-con. Y-shaped Dorado Riviera HOTEL, 9-hole golf course. $3,000,000. Martinez & Costa, Munoz Rivera Ave. and Eleanor Roosevelt, San Juan, Puerto Rico, structural engrs.

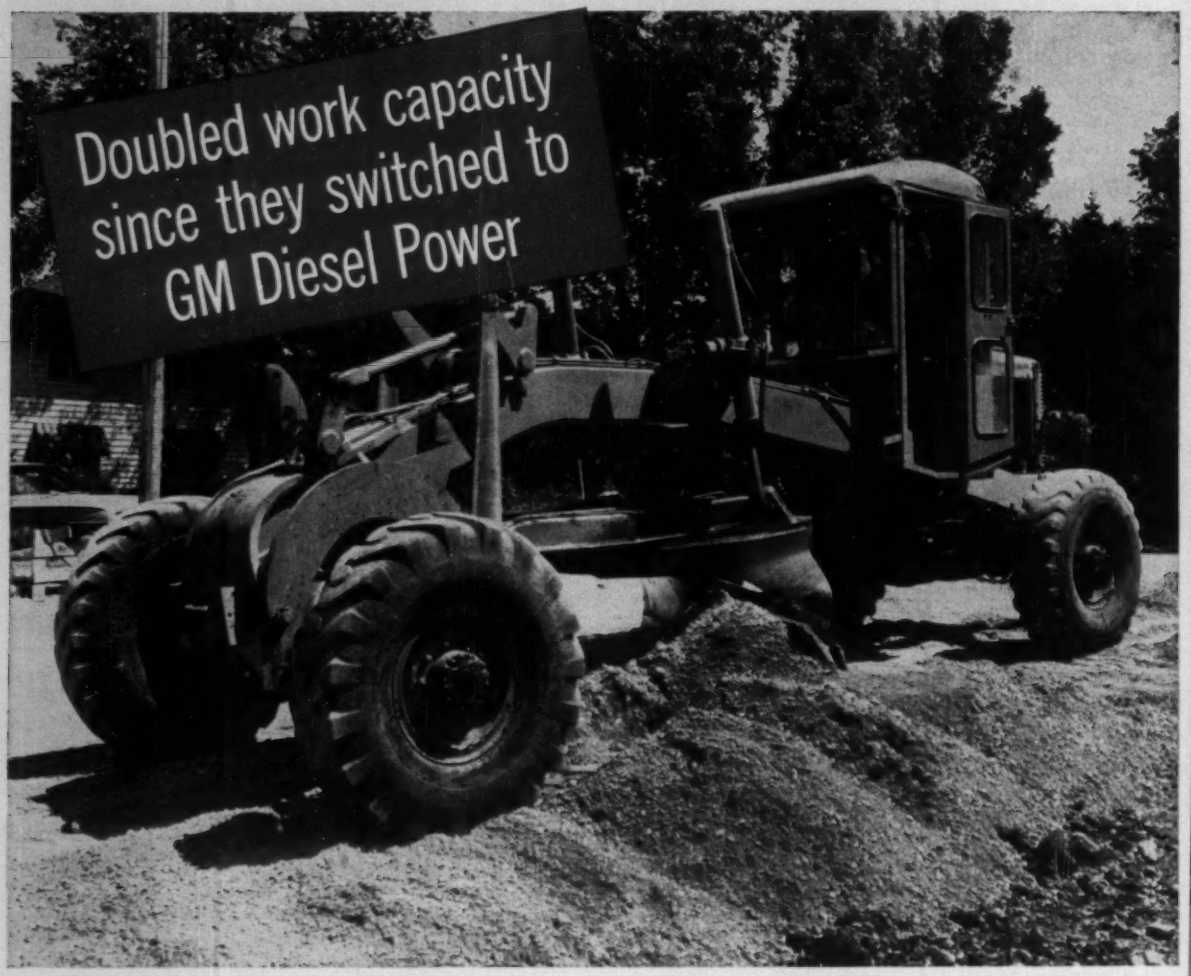
▲ **Puerto Rico, San Juan**—Felipe Segarra, P. O. Box 4623, plans by Metropolitan Builders, archts.-engrs., P. O. Box 9004, Santurce, Puerto Rico, 14 story 180-room HOTEL Flamboyan, 120-car underground parking. $2,500,000.

FOREIGN

▲ **Germany, Hamburg**—CONDEA Petrochemi-Gesellschaft, (Continental Oil Co., P. O. Box 2197, Houston, Tex., U. S. A. and Deutsche Erdol A. G., Hamburg) 50,000 tons per year INDUSTRIAL ALCOHOL PLANT.

(Proposal Advertisements see pp. 64 to 66)

GET REAL PRODUCTIVITY



Is there a difference in Diesels?

Ask Wilmer Lean, Patrol Superintendent of Wisconsin's Walworth County Highway Department, that question and you'll get a big "Yes!"

And Mr. Lean has on-the-job proof to back up his opinion.

For he pulled a competitive Diesel out of an Austin-Western 99H grader last year, replaced it with a "4-71" GM Diesel.

Result? "The '4-71' has doubled the work capacity of this unit," Mr. Lean says. Adds, "We now have four graders powered by GM Diesels in use and we're adding another 'Jimmy' by repowering an Oshkosh utility truck."

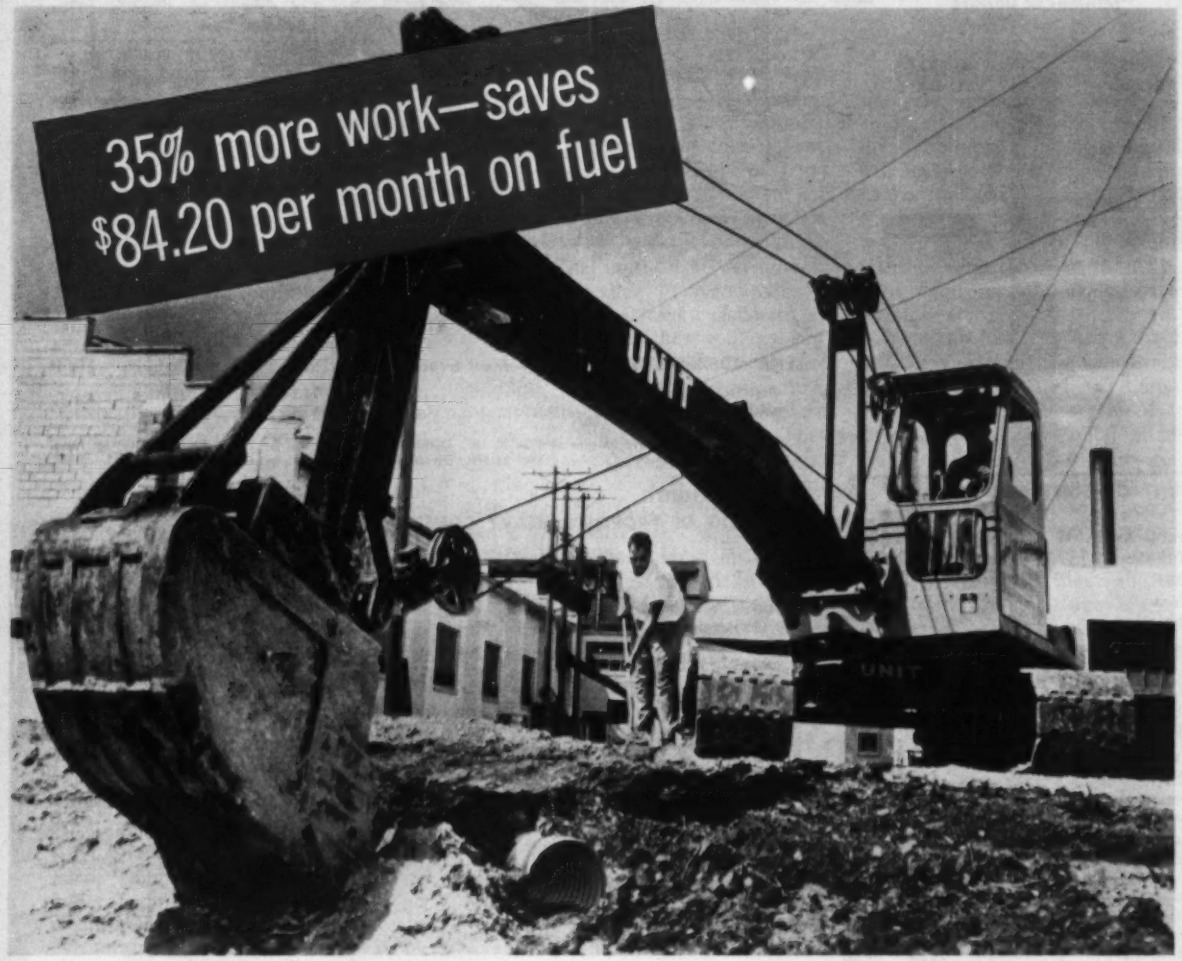
It's easy to see why a GM Diesel-powered grader will 'doze, cast, plane and crown faster than a grader powered by any other Diesel. A "Jimmy" delivers power on every piston downstroke—accelerates faster to pick up the load "right now."

This means you get more work done in less time—or the same amount of work done with fewer pieces of equipment. Either way you save big money in capital investment and operating expenses.

Want to know more? Your GM Diesel Distributor has the answers. He's part of a coast-to-coast network of "engine people" you'll find in the Yellow Pages under "Engines, Diesel." Or write us direct for more information.

GM DIESEL ALL-PURPOSE

GET A GM DIESEL ENGINE



When you switch to Diesel, you're sure to save money on fuel.

And when you use a "Jimmy" Diesel, you'll get a big bonus, too—increased productivity.

Louis C. Hoffman & Son of Cedarburg, Wisconsin, can prove it for you. They have a #617 Unit backhoe powered by a "3-53" GM Diesel working alongside a similar machine powered by a 6-cylinder gasoline engine.

The "Jimmy" uses only 13 gallons of 15¢ fuel a day . . . the gasoline unit uses 22 gallons of 28¢ fuel. Working 20 days a month, the GM Diesel-powered backhoe saves $84.20.

But the big plus is the 35% extra productivity. As Partner Roman Hoffman says: "This unit is highly maneuverable, does all the jobs we give it without 'pain or strain.' Compared with the other machine, it does approximately one-third more work at two-thirds the cost per day."

If that's what you'd like to be able to say about *your* equipment, see your GM Diesel Distributor. He's part of a coast-to-coast network of "engine people" you'll find in the Yellow Pages under "Engines, Diesel." Or write us direct for more information.

POWER LINE

Sets the standard of Diesel productivity

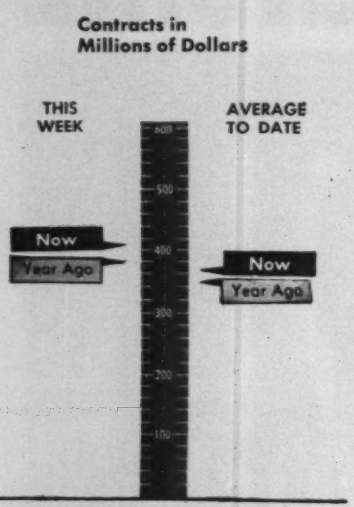
GM DIESEL

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

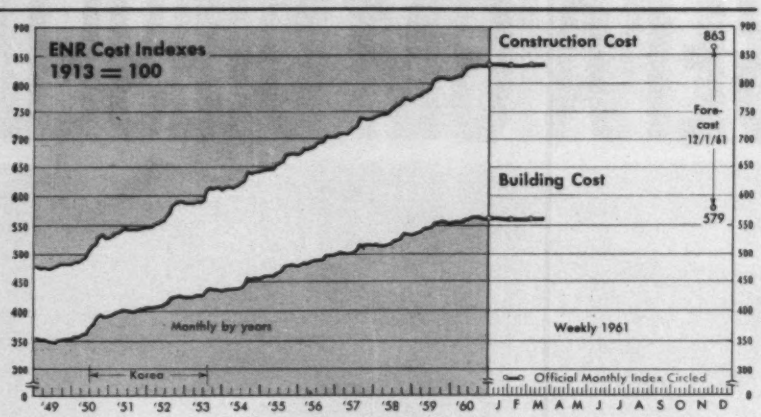
Contracts Awarded In 50 States By Type	This Week	Cum. 13 wks 1961 millions	Chge '60-'61 %
All Heavy Construction	$405.1	$4,932.5	+ 6
By Ownership			
PRIVATE	234.5	2,515.4	+ 2
PUBLIC	170.6	2,417.1	+10
State & Municipal	137.6	1,823.2	+11
Federal	33.0	593.9	+ 7
By Type of Work			
PUBLIC			
Waterworks	3.9	87.4	+15
Sewerage	10.7	163.6	+20
Bridges*	11.5	125.7	−41
Highways	49.4	818.3	+27
Earthwork, Dams & Waterways	17.9	161.6	− 4
Buildings:			
Excl. Housing	47.8	601.6	+18
Housing	16.4	160.8	+38
Unclassified	12.9	298.2	−10
PRIVATE			
Buildings:			
Mass Housing	149.8	1,096.4	− 3
Commercial	23.5	514.2	+ 2
Industrial	55.7	795.0	+42
Unclassified	5.6	109.7	−61

*Includes Private bridges

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Mar. 23	Cum. 12 wks 1961 millions	Chge '60-'61 %
Corporate Securities	$ 57.3	$ 388.6	−31
State and Municipal:			
All Except Housing	198.5	1,586.6	− 3
Housing	1.8	19.3	+42
Federal Loans	0	49.3	+ 6
Federal Aid	0	0	0
Total Nonfederal	$257.4	$2,043.8	− 9
Federal Appropriations:			
Projects in U. S.	0	0	0
Outside U. S.	0	0	0
Total New Capital	$257.4	$2,043.8	− 9


ENR Cost Indexes 1913 = 100
Construction Cost
863
Fore-cast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60
J F M A M J J A S O N D

ENR INDEXES (1913=100), 20-cities' average	Week of Mar. 23 1961	% Change from Feb. 23 1961	% Change from Mar. 24 1960
Construction Cost	834.68	+0.07	+2.6
Building Cost	563.41	+0.1	+1.5

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	February 1961 (millions)	Percent Change from last Month	Year
Total U. S. (ENR reported)	$125,588	+0.2	+4.5
By Ownership—			
Private	56,249	+0.2	+7.2
State & Municipal	54,904	+0.2	+3.4
Federal	14,435	+0.1	−0.9
By Type of Work—			
Waterworks	3,010	+0.03	+4.4
Sewerage	4,182	+1.4	+8.2
Bridges	3,335	−0.2	−2.5
Highways	13,602	+0.2	+0.3
Earthwork, Dams and Waterways	12,080	−0.1	+0.3
Public Buildings	23,047	+0.4	+5.5
Industrial Buildings	17,804	−1.2	+3.2
Commercial Buildings	27,777	+0.9	+13.2
Unclassified, Private	10,668*	+5.7	−0.1
Unclassified, Public	10,083	+0.5	+0.5

* Includes Private Bridges, $101 million

FLOW OF NEW PROJECTS INTO THE BACKKLOG

	1961 Feb.	1961 2-Mos. (millions)	Percent Change from 1960 Feb.	2-Mos.
Total U. S. (ENR reported)	$1,729	$3,730	−23	− 4
By Ownership—				
Private	1,107	2,045	+23	+20
State & Municipal	547	1,587	−50	−12
Federal	75	98	−72	−73
By Type of Work—				
Waterworks	32	203	−18	+175
Sewerage	106	143	+100	+21
Bridges	15	87	+25	+60
Highways	112	248	−84	−67
Earthwork, Dams and Waterways	4	7	−67	−84
Public Buildings	323	840	+10	+ 1
Industrial Buildings	291	589	+17	+17
Commercial: Mass Housing	387	614	+32	+19
Other Building	333	667	+16	+21
Unclassified, Private	96	175	+39	+42
Unclassified, Public	30	157	−88	−47

FLOW OF PROJECTS OUT OF THE BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	755	1,710	+32	+38
By Ownership—				
Private	371	766	+83	+62
State & Municipal	324	724	+16	+33
Federal	60	220	−34	− 3

Foreign Aid Takes a New Tack

Emphasis on social projects—housing, school building, public sanitation, access roads to new communities and land development—in President Kennedy's five-year foreign aid program and his separate but similar social program for Latin America may sharply alter the pattern and type of construction in underdeveloped countries. At the same time, his call for a greatly expanded basic development program—if heeded by Congress—would make more long-term capital available for big development projects usually involving substantial amounts of heavy construction.

The foreign aid message sent to Congress last week calls for establishment of a new semi-autonomous aid administration under a State Department administrator. This new organization would take over all the foreign aid functions now handled by the International Cooperation Administration, the Development Loan Fund and other agencies. Export-Import Bank's local-currency lending operations would also be transferred to the new organization, but it would continue to provide export credit and hard loans for major development projects.

Most controversial proposal is that Congress authorize the new aid administration to bypass the congressional appropriation route by borrowing directly from the Treasury up to $7.3 billion over the next five years. This "backdoor financing" is sure to be vigorously opposed by those in Congress who are jealous of their control of the Treasury's purse strings.

The proposed new borrowing authority would be used to provide development loans, repayable in dollars over periods of up to 50 years at little or no interest. These funds would be in addition to some $1.5 billion a year in other forms of economic aid. Military aid would be divorced from the economic aid program, financed instead through the defense budget and administered by the Pentagon.

When it comes to the special social development fund for Latin America, the President is asking for $500 million as a starter. He has made it clear this amount will be only a first installment, provided the Latin American countries demonstrate that they can use more money effectively. This is a big "if," since effective social development in many countries will require them to revise drastically their tax and property laws—such revisions are sure to be resisted by political groups.

Under both programs, social development will be stressed as an essential counterpart to economic development. While social development programs being worked up in Washington will involve a lot of construction—hospitals, schools, housing and roads—the thinking now is that most of the work should be handled locally. Poor communities and people cannot afford elaborate installations. Instead they would be provided with land, materials, plans, and technical assistance by their own governments, with the U.S. footing part of the bill where appropriate. They would also be expected to provide most of the labor. Conceivably at some stage, large-scale urban housing developments, new universities, large medical centers and other public installations might need the special skills of the U.S. construction industry. Likewise, modernization of urban water facilities might require physical, as well as financial and technical, help from the U.S.

Increased emphasis upon social development is only one of the aspects of the new approach to foreign aid, of course. If the five-year multibillion-dollar Kennedy program is approved it will make possible a long-term approach to development of poorer countries for the first time. A substantial number of big projects that have not been undertaken because there has been no assurance of long-term financing now will be seriously considered.

Note this too: The new aid administration will give higher priority to countries able to help themselves, countries sufficiently organized to use large injections of capital effectively. India, of course, is the prime example. Countries unwilling or unable to plan and follow through on effective development plans won't be cut off from aid if it is in the political interest of the U.S. to keep them afloat. But short-term handouts, one official says, will be cut below "the level of political comfort," in order to increase the incentives for well planned development.

New Index for Equipment Orders

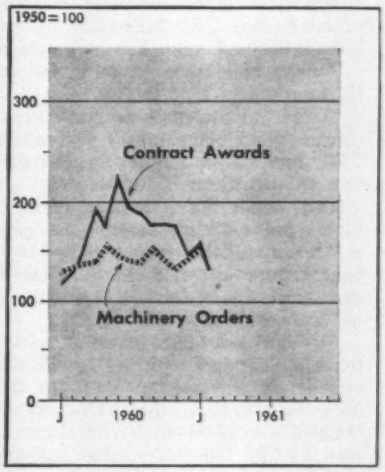
A new yardstick of equipment orders now available may show more accurately the trend in contractors' buying and how construction equipment manufacturers are doing (see chart).

The new Construction Equipment New Orders Index is computed by the McGraw-Hill Economics Department and the Construction Contract Award Index by ENR. Both indexes are based on 1950 monthly dollar volume as 100.

The new index excludes mining equipment and other non-construction equipment items that reporting manufacturers produce. This index will be reported monthly, but the quarterly orders forecasts by manufacturers will be made only for the Construction and Mining Machinery Index (ENR Feb. 23, p. 88).

In January, new equipment orders were second highest on record for the month, climbing for the second consecutive month to 156. The sharp rise of 7% over December and 16% over one year ago, paralleled the trend in heavy construction contractors' new business. The Contract Award Index of 162 in January, was 11% above December and 32% above a year ago.

February contracts, however, dropped



sharply, even slipping below the level of one year ago. The Contract Award Index of 132 for February was down 19% from January and 4% from February 1960. It was also below February 1956 and 1957.

Contract volume for the first two months, however, is still 13% ahead of the first two months of last year.

Failures Hit a Record Rate in '60

Failures among contractors and specialty subcontractors hit a record rate last year, according to Dun & Bradstreet.

For every 10,000 contractors and subcontractors in operation at the start of 1960, 55 were bankrupt by the end of that year. The 1960 failure-rate was the highest since 1943 when D&B started recording separate statistics for contractor bankruptcies. The failure-rate in 1960 compares to 44 per 10,000 in 1959 and 46 per 10,000 in 1958, the previous high mark. Last year's rate, however, was probably well below 1932, when failures among all businesses ran at a record-smashing rate of 154 per 10,000 "listed" businesses.

During the last 13 years, the rise in contractor-failures generally has been no worse than in business as a whole. Last year, however, was an exception—bankruptcies among contractors rose much faster than those in all business.

And in the first two months of this year, contractor failures still appear to be rising slightly faster than all-business failures: 481 contractors went under, a 24% increase over last year's same period.

The $26.1 million in liabilities of those failing in the first two months was 14.7% higher than the liability-total of the 1960 bankrupts.

Hardest hit this year are building subcontractors—271 failed as against 208 in 1960's January-February period.

Among building contractors, failures this year are up 17% to 179.

"Other" contractors—generally heavy construction companies—registered a 15% increase in failures in the first two months, from 27 to 31.

The major force pushing failures higher is the decline in profit margins, as shown in the table. (The 1959 figures were just released by Dun & Bradstreet; figures for last year will not be ready until late this year.)

All signs continue to point to extremely sharp price-cutting for the remainder of this year at least. In Illinois, for example, the Division of Highways received on March 10 to a total of 503 bids for various highway projects, an average of six bids per job. And the low-bid total of $23.8 million was $2.6 million or 11% below estimates.

The cut-throating apparently is not limited to big jobs. In Kentucky's Shelby County, two contractors out of a total of 14 bidding firms submitted identical low bids of $16,250 for a 65,000-cu-yd earth dam at Long Run Lake. The low bids were about half of what county officials estimated.

The pressure of competition becomes apparent in other ways too. Contractors complain that government agencies are doing an excessive amount of work with their own forces. The Montana Contractors Association charges that the Montana Highway Commission is increasing the amount of highway construction done by its own forces. The same charge is made by contractors in Kentucky. And in Niagara Falls, N. Y., both labor organizations and contractors are pressuring the city to award street-paving jobs to contractors instead of the city doing the work.

Contractors' and Suppliers' Profits

(Median profit percentages)

Net Profit on Tangible Net Worth

Years	CONTRACTORS Building	CONTRACTORS Electrical	STEEL Fabricators*	WHOLESALERS Lumber & Building Material	WHOLESALERS Plumb. & Heat.	RETAILERS Lumber & Building Material
1959	7.66%	5.88%	4.82%	5.10%	6.97%	4.54%
1958	9.48	9.28	8.92	5.10	4.02	4.01
1957	10.68	17.70	14.93	3.46	3.86	4.80
1956	11.10	9.63	12.54	8.22	9.85	6.01
1955	8.80	9.37	11.83	7.34	8.55	5.50
1954	7.39	6.19	10.08	6.53	5.71	6.92
1953	11.92	13.89	11.89	7.14	6.86	4.94
1952	9.63	14.96	12.54	5.54	8.19	6.98
1951	11.54	14.62	15.82	12.04	11.86	8.29

Net Profit on Working Capital

1959	12.45%	10.44%	8.47%	6.15%	7.63%	6.25%
1958	16.71	10.47	12.94	6.31	4.61	5.42
1957	17.33	22.99	25.90	4.57	4.43	6.26
1956	15.18	13.80	20.24	9.97	10.72	8.28
1955	13.83	12.54	19.30	10.26	10.61	7.85
1954	11.76	9.43	17.89	8.66	7.55	8.59
1953	19.21	17.24	18.59	9.29	8.20	7.07
1952	12.20	20.45	20.89	6.63	9.34	9.24
1951	18.54	17.33	25.62	15.28	13.85	10.91

Net Profit on Net Sales

1959	1.33%	1.17%	1.63%	1.35%	1.72%	1.92%
1958	1.46	1.94	3.72	1.24	1.06	1.65
1957	1.56	3.69	3.84	1.30	1.09	1.66
1956	1.61	2.07	3.99	2.15	2.08	1.88
1955	1.52	1.73	3.39	1.54	1.88	1.65
1954	1.29	2.21	2.52	1.60	1.60	1.98
1953	2.05	3.09	3.14	1.89	1.65	1.57
1952	1.30	3.39	4.02	1.21	1.71	2.60
1951	1.82	3.13	5.07	2.78	2.76	2.79

Number of Companies Covered

1959	159	49	94	109	179	156
1958	168	49	96	104	161	142
1957	179	51	101	87	156	130
1956	145	55	103	90	140	130
1955	133	42	74	85	138	128
1954	123	47	76	83	136	132
1953	122	45	65	74	125	136
1952	130	43	59	77	127	139
1951	133	39	53	76	123	132

* Structural steel fabricators
Data: Dun & Bradstreet

Labor Lobby Hits a Bumpy Road

- **Delegates to the building trades' legislative conference find that Congress is handling most liberal legislation with asbestos gloves.**
- **Due partly to industrial union obstruction, they see little hope of making any headway on the controversial situs picketing bill.**
- **But this year's conference, like its pre decessors, improves the art of union lobbying and holds out the promise of deferred dividends.**

The AFL-CIO building trades unions are apt to get little out of Congress this year except some run-of-the-mill anti-recession measures that President Kennedy and others are pushing.

Even those measures are having tough sledding. The first of them did not squeak through Congress until last week. That was the bill extending unemployment benefits to those who have exhausted their regular benefits.

What the building trades want the most, the situs picketing bill, has almost no chance this year. The bill would ease the present boycott restrictions at construction sites. One of the reasons for the bill's unfavorable prospects is that the AFL-CIO's Industrial Union Department has threatened to destroy the unity of AFL-CIO support—a unity Congress is now insisting on—for any labor legislation the federation seeks.

These conclusions seemed to be part of the handwriting on the wall when 3,000 union construction workers gathered in the nation's capital last week to participate in the herculean task of loosening the conservative chains on a "liberal" Congress. Occasion was the Seventh Annual Legislative Conference of the Building and Construction Trades Department, AFL-CIO.

Delegates to the conference spent four days on Capitol Hill and in the surrounding hotels trying to sell members of Congress on their broad-based, 11-point legislative program for 1961.

The program is similar in content to those presented in previous years. But it has been tailored—and even compromised—to meet the demands of practical politics and to fill some of the needs of a deteriorating union movement and a sagging national economy.

Heading the list of requests:

- The situs picketing bill.
- An amendment to the Davis-Bacon Act to require that fringe benefits be used, as well as basic hourly wages, in the determination of prevailing wages. These are the minimum rates of pay that must be paid by contractors on federal public works and on certain federally assisted construction projects.
- A "Work Hours Act of 1961" to require contractors on all Davis-Bacon work to pay overtime of at least time-and-a-half for all hours in excess of eight a day or 40 a week. Sponsors of the bill contend that under the present Eight-Hour Law contractors on many projects can work eight hours a day for seven days a week (a total of 56 hours) without paying overtime.
- The minimum wage bill. The unions are particularly insistent that Congress extend coverage to give more construction workers the overtime protection of the Fair Labor Standards Act. A conservative coalition in the House rejected the plea last week. The Senate may grant it.

The unions are also asking for federal aid to education, depressed areas legislation, medical care for the aged, housing legislation, stepped-up road and airport construction and various Taft-Hartley and Landrum-Griffin amendments. (They are not pushing the latter very seriously at the moment.)

The building trades, which have a reputation for realism, call the program a "practical" one. They admit that they could "improve on" the situs picketing bill, for example, and that the Davis-Bacon amendment is not as broad as they would like. But they do not expect much luck in Congress and are afraid to push what little luck they may have.

Sen. Wayne Morse (D., Ore.), who introduced and supports the situs picketing bill, told them that Congress this year is handling legislation with "asbestos gloves." Rep. Frank Thompson, Jr. (D., N. J.), House sponsor of the situs bill, said: "The coalition of reactionaries from both sides of the political aisle have ganged up against any progressive legislation."

The most candid appraisal of the political situation came from Andrew J. Biemiller, a former Congressman who is now legislative director of the AFL-CIO. He sized it up this way: "We anticipate that on every major piece of legislation the final result is going to be decided by margins of five to 10 votes in the House and we have to go out and get every vote we can get."

One result is that the building trades are using every string in the bow to promote their legislative program.

They are emphasizing the size of the construction industry and its importance in efforts to stimulate employment and restore the economic health of the nation. Thus, on economic as well as social grounds, they say, passage of such bills as those relating to school construction, depressed areas, highways, airports and housing are both necessary and in the public interest.

The same logic is also applied to the bills that are closer to the hearts of the unionists. For example, the building trades say that the situs picketing, Davis-Bacon, overtime and minimum wage proposals all seek to prevent the depression of wage levels—something an expanding economy cannot afford.

In a further effort to avoid the label of "special interest" legislation, the construction workers are also using the argument that these particular pieces of legislation are of as much concern to "fair" contractors as they are to the unions. Each bill, they say, seeks to diminish the competitive advantage now enjoyed by nonunion contractors.

The building trades, up until last Wednesday, were hopeful of promoting their legislative chances by showing Congress a united legislative front.

Rep. Carl D. Perkins (D., Ky.), who heads the House subcommittee before which the situs picketing bill will come, had given them this advice: "If labor in general can come before the Congress with the unified labor story, it will be very helpful because we are going to encounter difficulty in passing much" of the program.

(*Please turn the page*)

AFL-CIO President George Meany, acutely aware of the problem, asked for federation unity on all AFL-CIO legislation. He specifically promised the building trades "the complete and absolute cooperation" of the federation on the situs picketing bill.

Two days later Walter Reuther's Industrial Union Department dropped a bombshell. In a letter to Building Trades' President C. J. Haggerty, the IUD said it could not support the situs picketing bill unless it is revised and broadened to give industrial unions, as well as craft unions, protection from the present ban on secondary boycotts. This development looked like part of the widening breach between Mr. Reuther and Mr. Meany.

Mr. Haggerty called the IUD position and the way it was handled, "unfortunate." He said he hoped an "understanding" could be reached but did not show much optimism.

The big trouble is that the building trades have banked on the long legislative history of the situs bill to help secure its passage—and that is why any substantial change in the wording of the bill has been avoided. The present bills, with the exception of the 10-day notice for picketing at defense installations, are precisely the bills approved in the past by various congressional committees and former President Eisenhower. And they are the ones President Kennedy endorsed.

After the Reuther torpedo struck, Mr. Haggerty admitted that the situs picketing bill stands little chance of passage anyhow and that "a lot more work" must be done before anything can be accomplished on it.

The value of the legislative conference to the unions, however, should not be judged by the dim prospects of any immediate or spectacular results from this last one.

Observers on Capitol Hill, for example, feel that the building trades' previous conferences are responsible for the inclusion of Davis-Bacon in the Federal Highway Act of 1956 and for the construction union amendments in the Landrum-Griffin law.

The conferences are not only slowly and persistently acquainting members of Congress with the building trades' story, but they are also giving the construction workers an effective lesson in lobbying.

And here, perhaps, the most important thing is that the conference is considered only the beginning of lobbying. The real job, the workers are told, begins when they return home and solicit support from every hamlet in the nation—because Congress, in the last analysis, reflects the "will of the people."

With all the pagentry the White House can offer . . .

The Big Committee Goes to Work

The Kennedy Administration has handed its 21-member Labor-Management Advisory Committee two tough problems—automation and competition from foreign producers—for its first working session next Monday. But it asks no quick solutions and, in fact, wants the committee to avoid specific issues that might lead to disruptive clashes between its members.

In drawing the thin line between the urgency of the issues and a go-slow approach, the Administration hopes to keep its "new experiment" in labor-management conferences in regular session. Meetings are scheduled for the first Monday of each month.

The group consists of seven labor, seven industry and five "public" members, with Labor Secretary Arthur J. Goldberg as chairman and Commerce Secretary Luther Hodges as vice chairman (they are to alternate assignments each year). At its organization meeting last week, the committee laid out ground rules to avoid the pitfalls of past labor-management conferences.

As Mr. Goldberg told the members, they are expected to serve as individuals rather than as representatives of special interests. No substitutes may serve in their place nor may they use proxies. To keep discussions free and loose, no transcript will be taken of the meetings nor will resolutions be passed by a vote of the members. The aim is to get a committee "consensus" on issues and make recommendations to President Kennedy in this manner.

No specifics were discussed in the first session, though the conference covered the full range of issues that will be taken up in the monthly sessions. Secretary Goldberg hopes to avoid critical issues long enough to give the committee members a chance to become better acquainted and, hopefully, to listen to one another.

The committee is expected to get into the wage-price issue and into collective bargaining problems. But it will specifically avoid labor-management disputes. This means it will at least try to stay out of such major bargaining battles as the coming negotiations in the automobile industry, although two of the committee members are United Auto Workers president Walter Reuther and Henry Ford II, board chairman of Ford Motor Co.

President Kennedy, who joined the committee during its all-day conference last week in the White House Cabinet room, told the members: "The purpose of this committee is to give direction to the general movement of wages and prices so that the general welfare of the country can be served." He said he expected the committee to approach problems objectively, "I don't know the answers to these questions and I'm sure none of us does, but I think we ought to consider them," he added.

Contractor Suit Saved from Estoppel

A municipality, like an individual, may waive its right to assert a legal claim.

A ruling to that effect recently came from a New York court in a construction case involving the New York City Board of Education. The effect of the decision was to expose the board to a claim against it by knocking out the board's defense that it could not waive a limitation period on claims that would have barred the action.

The facts were these:

The Planet Construction Corp. sued the Board of Education of the City of New York to recover a balance it claimed was due for the performance of the contract. The city asked the court to dismiss the action on the ground that the contract contained a provision to the effect that the time for the commencement of an action was limited to one year from the acceptance of the work, and the action was not commenced within the specified period.

The contractor contended that the board of education issued a change order to the contractor more than one year after the issuing of the final payment certificate and that the contractor had pressed for an audit of his claim which was not done until after the one year period had expired and that such action constituted a waiver of the right to claim the one year period as a limit to the right to commence an action. The board of education further contended that a local statute provided that no city shall have the power to waive the defense of the statute of limitations.

The lower court dismissed the action and the ruling was affirmed by the Appellate Division (8 A.D. 2d 781, 187 N.Y.S. 2d), but the contractor was given permission to appeal to the Court of Appeals.

That court, by a divided opinion, reversed the determination of the lower court, holding that the statute providing that no city shall have the power to waive the defense of the statute of limitations applied only to the statutory limitation of time in which to bring an action and did not apply to a limitation clause in the contract. It said that the action of the board of education in issuing change orders after the one year period had expired and in delaying an audit of the contractor's claim presented as issue of fact as to waiver and estoppel of the right to interpose the defense that the action was not brought within the one year period stipulated in the contract.[1]

The Court of Appeals stated: "In other words a limitation clause in a contract stands on no other or different footing than any other clause, and may be waived in a proper case, or estoppel may bar its enforcement. Estoppel may apply to a municipality as well as to an individual" (citing numerous cases).

In its decision, the Court of Appeals further stated: "The query remains whether on the motion for summary judgment there were triable issues as to waiver and estoppel. We think this query should be answered in the affirmative. The change order was issued to plaintiff (contractor) one year and above four months after the final payment certificate. In the interim, plaintiff pressed for an audit of its claim for extras which, according to the affidavits submitted by the plaintiff, was promised but not performed until the one-year period had expired. Moreover, the change order, in addition to setting forth items which the board was agreeable to pay, also deducted certain items from the contract price to the extent of $405.33. Thus the board was deducting from the amount under the contract a sum of money at a time when it claims plaintiff had lost its right to sue. This is a somewhat inconsistent position and would appear to have a bearing on the issues of whether the board did not waive the short period of limitation or is estopped from asserting it. The superintendent of construction apparently had wide power to determine the extent to which plaintiff was entitled to extras, and until such a time as he acted the plaintiff was in an anomalous position to say the least.

Under the circumstances we think that triable issues of waiver and estoppel were present in the case and that summary judgment was improvidently granted."

(1) Planet Construction Corp. v. Board of Education of the City of New York, 7 N.Y. 2d 381, 198 N.Y.S. 2d 68, N.Y. Court of Appeals, March 3, 1960.

Sub Held Liable for Defects

Government contracts may contain a provision giving the contracting officer power to make final and binding decisions on the degree and quality of contract performance.

Such a provision was upheld by a federal court in the following case.

An action was brought by a subcontractor under the Miller Act to recover the amount allegedly due for work.

The prime contractor counterclaimed for charge-backs resulting from replacing certain work that the contracting officer had determined was defective. The prime contract contained certain guarantees as to the work and the contractor, on notice from the contracting officer, was obligated to place the work in a satisfactory condition and to make good all consequential damage. Upon the contractor's failure so to proceed, the contract allowed the contracting officer to have the work done at the contractor's expense.

The subcontract by its terms incorporated the terms of the government contract. The court held[1] that under such conditions, the subcontractor was bound by the terms of the prime contract giving finality to the contracting officer's decisions on contract performance, compliance or breach.

In this case, the contracting officer found that the subcontractor had made defective installation of window sash springs which had to be replaced by the department of the government involved. The amount allowed was the reasonable amount spent by the government in making the necessary repairs. The prime contractor was allowed to make such charge-backs against the amount due the subcontractor.

(1) United States v. Bruce Construction Corporation, 272 F. 2d 62, U. S. Court of Appeals, Nov. 30, 1959.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book company, Inc.: *Legal Phases of Construction Contracts*; *Legal Guide for Contractors, Architects and Engineers*; and *Legal Cases for Contractors, Architects and Engineers.*

Extra Liability Flowed From Indemnity Clause

An indemnity clause may be broad enough to make a contractor liable for damages caused by the negligence of the owner.

An example of such a clause appears in a New Jersey case involving a contract between the Pangia Construction Co. and Owens Corning Fiber Glass Corp. for paving a yard and parking lot.

The contract contained this provision:

"ARTICLE 20. Indemnification of owner: The contractor hereby agrees to save and indemnify and keep harmless the owner against all liability claims and judgments or demands for damages arising from accidents to persons or property occasioned by the contractor, his agents or employees, and against all claims or demands for damages arising from accidents to the contractor, his agents or employees, whether occasioned by said contractor or his employees or by owner or his employees or any other person or persons, and said contractor will defend any and all suits that may be brought against the owner on account of any such accidents and will make good to, and reimburse, the owner for any expenditures that said owner may make by reason of such accidents."

An employee of the contractor was injured while working alongside the building owned by Owens. The injury was caused by the accidental spilling of hot waste material from a window in the second floor of the building. The injured employee brought suit against Owens to recover damages for the injuries.

Owens then joined Pangia, the contractor, as a party to the suit by a third party complaint demanding judgment against Pangia for indemnification, reimbursement and payment of all or any part of any sum which may be found in favor of the injured employee against Owens. The court rendered a verdict for $1,000 in favor of the injured employee and a judgment in favor of Owens for $1,000 and costs.

The court held[1] that the language of the indemnity agreement was clear, explicit and unequivocal to the effect that the contractor would indemnify the owner for any damages it might be liable for to the contractor's employees, even though the owner himself was at fault.

(1) Cozzi v. Owens Corning Fiber Glass Corp., 158 A. 2d 231, Camden County District Court of New Jersey, Feb. 16, 1960.

OFFICIAL PROPOSALS

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CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: April 19, 1961

Elizabeth River Tunnel Commission Norfolk, Virginia

Sealed proposals for CONTRACT NO. 4, Portsmouth Approach Highway of the SECOND ELIZABETH RIVER TUNNEL and APPROACHES, will be received by the Elizabeth River Tunnel Commission at the City Council Chamber, City Hall Building, 235 East Plume Street, Norfolk, Virginia, until 2 P.M. (EST) Wednesday, April 19, 1961, at which time and place the bids will be publicly opened and read aloud.

CONTRACT NO. 4 consists essentially of the construction of 1.6 miles of four-lane divided highway in bituminous concrete paving; construction of service roads, access ramps, improvement to local streets; construction of a highway bridge over the tracks of the Atlantic Coast Line and Southern Railroads in the vicinity of Railroad Avenue, Portsmouth. The bridge consists of five spans of steel stringer and concrete deck (composite construction) total length 293 feet, concrete piers and abutments supported on cast-in-place concrete piles. Also miscellaneous work, including drainage, water and sewer relocations, etc.

Plans and Specifications may be viewed at the office of the Commission at the Administration Building, Berkley, Norfolk, Virginia, and may be viewed and purchased at the office of the Engineer, Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, New York, upon payment of $35.00 per set. Additional sets of Plans will cost $30.00; and additional copies of Specifications will cost $5.00. DOCUMENTS ARE NON-RETURNABLE FOR REFUND. The Specifications, consisting of the Standard Specifications (Virginia Department of Highways, Road and Bridge Specifications, April 1, 1958 Edition), and the Special Provisions will include copies of the Proposal form, Proposal Bond form, Contract form, and Contract Bond form. Also furnished in the Contract Document Set will be pertinent sheets from the Road Designs and Standards of the Department of Highways. Any and all other pertinent information may be obtained at the New York office of Parsons, Brinckerhoff, Quade & Douglas.

Bidders are required by law to be registered with the State Registration Board for Contractors in Virginia.

A Proposal Bond, prepared in the form furnished, will be required of the bidder, in the amount of not less than twenty per cent (20%) of the aggregate bid for all work performed under CONTRACT NO. 4.

The Elizabeth River Tunnel Commission reserves the right to reject any and all proposals.

Bids: April 13, 1961

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS FOR REHABILITATION OF HYDE PARK GOLF COURSE SOUTH OF PORTER ROAD AND RESTORATION OF WATERWAYS FROM STATION 82/00 TO STATION 113/78 IN NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SPECIFICATION NO. PA-N-23048
NIAGARA CONTRACT NO. N39

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for rehabilitation of Hyde Park Golf Course south of Porter Road and restoration of waterways from Station 82/00 to Station 113/78, in Niagara Falls, Niagara County, New York, until 10:30 A.M., Eastern Standard Time on the 13th day of April, 1961, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are grading, topsoiling & seeding of the golf course (excluding greens, tees & bunkers) construction of parking lot, driveway and lawn sprinkling system. Estimated quantities of work are:

80 acres, Grading
4,000 cu. yds., Excavation, unclassified
3,800 cu. yds., Foundation course, crushed rock
80 acres, Topsoiling, 4 inches to 12 inches thick
80 acres, Preparing seed beds, placing limestone fertilizer, seeding, mulching and maintenance
1,710 lin. ft., Galvanized iron pipe

The golf course shall be ready for play on or before July 1, 1962.

All work shall be completed on or before September 15, 1962.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Department of Commerce, Bureau of Public Roads, March 16, 1961. SEALED BIDS will be received at the office of J. L. Obenschain, Division Engineer, Bureau of Public Roads, Gatlinburg, Tennessee, until 11:00 a.m., E.S.T., APRIL 20, 1961, for Project 1B4, Great Smoky Mountains National Park, Swain County, North Carolina. Grading, Draining, Tunnel with Lining, Crushed Aggregate Base, Hot Bituminous Concrete Pavement, and other work from Newfound Gap 4.290 miles towards Cherokee. The approximate quantities of the more important items are: 850,000 cu. yd. Unclassified Excavation, 11,000 cu. yd. Unclassified Excavation for Tunnel, 30,000 tons Aggregate Base, 425 lin. ft. Concrete Tunnel Lining, 450,000 lb. Structural Steel Tunnel Inner Lining and 6,500 tons Hot Bituminous Concrete Pavement. Minimum wage rates have been fixed as required by law. Plans, specifications and bid forms are available upon request at the address given above.

CORRECTION

In advertisement of Power Authority of State of New York, Specification No. PA-N-23045, Niagara Contract No. N 36, bid date listed as 2:30 A.M. on 6th day of April, 1961. Correct time is 2:30 P.M. on 6th day of April, 1961.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5559) will be received at Denver, Colorado, until 2 p.m., MST, April 27, 1961, for furnishing three (3) electric motor-driven, vertical shaft, centrifugal type pumping units, each with capacity of 167 cfs. at 45-foot head; three (3) electric motor-driven, propeller or mixed-flow type pumping units as follows: two units each with capacity of 75 cfs. at 19-foot head and one unit with capacity of 150 cfs. at 19-foot head for Willard Pumping Plants No. 1 and No. 2, Weber Basin Project, Utah. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5560) will be received at Prineville, Oregon until 10 a.m., Pacific Standard Time, April 27, 1961, for furnishing labor and materials for Earthwork and Structures for Drains and Lytle Creek Wasteway, Crooked River Project, Oregon. Location Prineville, Oregon. Principal items are 160,000 cu. yds. of excavation; 186 cu. yds. of concrete; furnishing and installing 3 slide gates and 2 weirs; and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, Box 578, Prineville, Oregon; P. O. Box 937, Boise, Idaho; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5562) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, May 9, 1961, for furnishing eight (8) oil-pressure, cabinet type, actuator governors for regulating the speed of eight 155,500 horsepower, 150 rpm, vertical-shaft hydraulic turbines for Glen Canyon Powerplant, Colorado River Storage Project, Arizona-Utah. Delivery is desired within 1,440 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: April 20, 1961

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract LGA-350.003—La Guardia Airport — Rest Room Facilities — Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, April 20, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, March 30, 1961

OFFICIAL PROPOSAL

RATE: $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: May 18, 1961

Courts Building
Rochester-Monroe County
Civic Center
Rochester, New York

ADVERTISEMENT FOR PROPOSALS

Notice is hereby given that sealed proposals for the Courts Building, for the Rochester-Monroe County Civic Center, will be received by the Rochester-Monroe County Civic Center Commission at the office of the Monroe County Purchasing Agent in the Monroe County Court House until 2:00 o'clock P.M., Eastern Standard Time on May 18, 1961. They will be publicly opened and real aloud at that hour in the Supervisors Chambers of the Monroe County Court House, Rochester, New York.

The proposals shall be for furnishing all labor, materials, insurance, bonds, equipment, facilities, transportation and services necessary for and reasonably incidental to the completion of all work for the above project in accordance with the Drawings, Specifications and other Contract Documents prepared by Todd and Wiard, Architects.

The work is divided into the following separate contracts, each to include portions of the complete work as follows:

General Construction (Contract 4G)
Plumbing Work (Contract 4P)
Heating, Ventilating & Air Conditioning Work (Contract 4H&V)
Electrical Work (Contract 4E)
Vertical Transportation Work (Contract 4X)

These Drawings, Specifications and other Contract Documents may be examined and copies thereof may be obtained at the office of the County Purchasing Agent in the Court House, Rochester, New York. Not more than two (2) copies of the said documents may be obtained upon payment of One Hundred Dollars ($100.00) deposit per copy. Any person, firm or corporation submitting a bid to the Rochester-Monroe Civic Center Commission on this project and returning such copies in good condition within thirty (30) days following the opening of the Proposals will be refunded One Hundred Dollars ($100.00) per copy. Reimbursement of Fifty Dollars ($50.00) per copy will be made to any person, firm or corporation not submiting a bid to the Rochester-Monroe County Civic Center Commission on this project and returning other copies of the Drawings and Specifications in good condition within thirty (30) calendar days following the opening of Proposals.

The County of Monroe reserves the right to reject any or all Proposals and to waive informalities, should their best interest thereby be promoted.

Proposals shall be made on the Proposal form provided, conforming to the forms included in the Contract Documents, and each Proposal shall be accompanied by a certified check or cashiers check, made payable to the Rochester-Monroe Civic Center Commission, in an amount not less than five per cent (5%) of the total amount of the Proposal, conditioned that the bidder will execute the Contract and deliver the required insurance and Performance Bond for the proposed work within ten (10) calendar days after the date of written notice that his Proposal has been accepted.

Bid bonds in the amount of five per cent (5%) of the amount of the Proposal, in proper form, executed by a surety company acceptable to the Rochester-Monroe Civic Center Commission, will be accepted in lieu of the aforesaid certified check or cashiers check.

The work involved in this project is not financed or aided by any Federal or State agency.

A bidder may not withdraw his Proposal within forty-five (45) calendar days after the opening of the Proposals, but may withdraw his Proposal any time prior to the scheduled time for the opening of Proposals.

A meeting of prospective bidders and the Architects for explanation of Drawings, Specifications and other of the Contract Documents, will be held at 2:00 P.M. Eastern Standard Time, April 27, 1961 in the Supervisors Chambers, Court House, Rochester, New York. Questions desired to be answered at this meeting shall be submitted in writing to the Architect, Todd and Wiard, 311 Alexander Street, Rochester 4, New York, on or before April 25, 1961.

COLBOURNE A. BENNETT
Purchasing Agent
County of Monroe, New York

OFFICIAL PROPOSALS

Bids: April 14, 1961

Port of New Orleans

Sealed bids will be received on Requisition Eng 6014 by the Board of Commissioners of the Port of New Orleans at their office, Room 204, No. 2 Canal Street, until Friday April 14, 1961, at 2:00 o'clock P. M., and then publicly opened for furnishing approximately 194,000 lin. ft. of 12.75" O. D. and 21,000 lin. ft. of 14" O. D. by ¼" wall thickness, steel pipe piles, and 2,365 three-quarter inch thick end plates, rail or water delivery. Piles advertised herein are in addition to, and separate from, the steel pipe piles on Requisition Eng 6012.

Deposit of 5% of bid, by certified or cashier's check, is required with bid.

Acceptable surety bond for amount of bid is required with notarial contract.

Board may accept or reject any bids, waive informalities and award contract in its best interest.

Specifications and bid forms may be obtained at Room 214 upon deposit of $10.00 per set, by check payable to Board, refundable only to the extent of three sets and only to anyone submitting a bid directly to Board.

Bids: April 14, 1961

Port of New Orleans

Sealed bids will be received on Requisition Eng 6012 by the Board of Commissioners of the Port of New Orleans at their office, Room 204, No. 2 Canal Street, until Friday, April 14, 1961, at 2:00 o'clock P.M., and then publicly opened for furnishing approximately 460,000 lin. ft. of 12.75" O.D. and 66,000 lin. ft. of 14" O.D. by ¼" wall thickness, steel pipe piles, and 5,740 three-quarter inch thick end plates, rail delivery. Piles advertised herein are in addition to, and separate from, the steel pipe piles advertised on Requisition Eng 6014.

Deposit of 5% of bid or $100,000.00, whichever is smaller, by certified or cashier's check, is required with bid.

Acceptable surety bond for amount of bid is required with notarial contract.

Board may accept or reject any bids, waive informalities and award contract in its best interest.

Specifications and bid forms may be obtained at Room 214 upon deposit of $10.00 per set, by check payable to Board, refundable only to the extent of three sets and only to anyone submitting a bid directly to Board.

District of Columbia—Highway Construction—Dept. of Highways & Traffic, D. C., March 14, 1961. NORTH CAPITOL STREET IMPROVEMENTS, GRADE SEPARATIONS AT RHODE ISLAND AVE. AND T ST. AND INCIDENTAL WORK RANDOLPH PL. TO BRYANT ST. (FEDERAL AID PROJECT F-7(17)—Invitation C-6183-H, consist. approx. of 60,000 cu. yds. Unclassified Excavation; 21,500 sq. yds. Reinforced Portland Cem. Concrete Base 10"; 1,300,000 lbs. Reinforcing Steel; 11,050 Cu. Yds. Class BB Concrete for Footings & Walls; 45,000 Cu. Ft. Class B Stone Masonry; and 265,000 lbs. Structural Steel. (Wage rates have been predetermined by the Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $30.00 per set, payable to D. C. Treasurer. (Phone NA. 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EST, April 11, 1961, in Room 424, 499 Penn. Ave., N.W.

OFFICIAL PROPOSALS

Bids: May 16, 1961

Dade County Port Authority

ADVERTISEMENT FOR PRE-QUALIFICATION OF PRIME CONTRACT AND SUB CONTRACT BIDDERS ON THE CONSTRUCTION OF MAJOR JET OVERHAUL FACILITIES FOR EASTERN AIR LINES, INC., TO BE CONSTRUCTED BY THE DADE COUNTY PORT AUTHORITY, AT MIAMI INTERNATIONAL AIRPORT, MIAMI, DADE COUNTY, FLORIDA. PRE-QUALIFICATION OF BIDDERS

Pursuant to Resolution No. 6389, adopted by the Board of County Commissioners of Dade County, Florida, acting as the Dade County Port Authority, at its regular meeting of March 21, 1961, every contractor desiring to tender proposals on one or more divisions of the work for the Major Jet Overhaul Facilities for Eastern Air Lines, Inc., to be constructed by the Dade County Port Authority at Miami International Airport, Miami, Dade County, Florida, must submit a statement of experience and financial condition, on the form prescribed, for use by the Authority in investigating and determining the qualifications of bidders, and must be approved by the Authority as qualified to undertake, perform and complete said work **before being eligible to receive drawings and specifications for bidding or for contract award.**

All questions contained in the prescribed form must be answered, and the data must be clear and comprehensive. The statement must be notarized and delivered to the Clerk of the Board of County Commissioners, Room 1616, Dade County Courthouse, Miami, Florida, or mailed to the Clerk of the Board of County Commissioners, Post Office Box 3510, Miami, Florida, and received by him on or before 2:00 P.M., E.S.T., Tuesday, May 16th, 1961.

Contractors shall submit a separate statement for each division of the work on which they desire to tender a proposal.

CERTIFICATE OF COMPETENCY

The requirements for pre-qualification of bidders are in addition to the provisions of Chapter 10, Code of Metropolitan Dade County, which require all persons, firms or corporations desiring to engage in the contracting or sub-contracting business in the construction field in Dade County, to possess a Certificate of Competency from the appropriate Metropolitan Dade County Examining Board.

DESCRIPTION OF PROJECT AND DIVISIONS OF WORK

The project, for which plans and specifications are now being prepared, will consist, in general, of the following:

1. SITE UTILITIES AND LAND IMPROVEMENTS, including underground piping mains, electrical distribution systems, concrete aprons and bituminous pavements; also the removal of certain existing structures.
2. ENGINE OVERHAUL SHOP (approximately 200,000 sq. ft.) with adjacent Components Test Area.
3. TWO (2) JET ENGINE TEST CELLS, including control room and equipment and service areas.
4. SERVICE FACILITIES BUILDING (approximately 12,000 sq. ft.), housing boilers, air compressors, refrigeration compressors, fire pump, electrical equipment, distillation equipment; includes Tank Farm.
5. HANGAR BUILDING (approximately 90,000 sq. ft.) with adjacent 3-story structure housing shops, offices, and storage areas (approximately 50,000 sq. ft. per floor).
6. INDUSTRIAL WASTE TREATMENT PLANT, to be converted from existing Sewage Treatment Plant.

Separate bids will be taken on each of the following divisions of work at a time or times, in a manner and under the terms and conditions as the Dade County Port Authority shall prescribe:

DIVISION A. STRUCTURAL STEEL—furnishing, fabrication and erection of the structural frame of the Engine Overhaul Shop, the Service Facilities Building, and the Hangar Building; also Pipe Trestles.

This division of the work will be let under separate prime contract.

DIVISION B. ARCHITECTURAL TRADES—general construction of the entire project, including Land Improvements.

The successful bidder on this division of the work will be required to assume, under a single General Contract, all of the other divisions of the work (except Structural Steel) hereinafter enumerated.

DIVISION C. CRANES, MONORAILS, HOISTS—providing coverage of the entire Overhaul Shop and the Hangar Building.

DIVISION D. MECHANICAL TRADES—including site mains as well as installations in all buildings (except in Service Facilities Building) of domestic water supply, stormwater, sanitary and industrial wastes, compressed air and Varsol, jet-engine fuel, steam and chilled water services; also services and connections to process and test equipment.

DIVISION E. VENTILATING AND AIR CONDITIONING—all air handling equipment and duct distribution systems in Engine Overhaul Shop, Jet-Engine Test Cells and Hangar Building.

DIVISION F. FIRE PROTECTION—including deep-well pumps, site mains, and building systems consisting of CO_2, deluge, and standard automatic sprinkler systems.

DIVISION G. PIPING AND EQUIPMENT—in the Service Facilities Building and Tank Farm, including boilers and associated equipment, air compressors, refrigeration compressors, cooling tower, Varsol distillation; also all building mechanical installations.

DIVISION H. ELECTRICAL WORK—including primary incoming service, switchgear, and underground site distribution; secondary power, lighting and signal systems; distribution and installation for the entire project; also service and connections to process and test equipment.

Qualification forms will be available during office hours at the office of the Engineer, Dade County Port Authority, Terminal Building, Miami International Airport, Miami, Florida, and may be obtained there or by written application directed to the Engineer at 59-2075 A.M.F. Branch, Miami 59, Florida.

The Dade County Port Authority reserves the right to secure additional information, or to verify the information from any source available to them in determining the qualifications of the Contractor.

The Dade County Port Authority reserves the right to waive any informalities and to reject any and all applications for qualification.

DADE COUNTY PORT AUTHORITY
DADE COUNTY, FLORIDA
BY: E. B. LEATHERMN,
Clerk of the Circuit Court
BY: EDWARD D. PHELAN
Deputy Clerk

Bids: April 11, 1961

The Peninsula Airport Commission

ADVERTISEMENT FOR BIDS

The Peninsula Airport Commission, H. K. Peebles, chairman, Newport News, Virginia, will receive bids until 2 P.M. April 11, 1961, at the Office of the Airport Manager, The Patrick Henry Airport, Newport News, Virginia, for cleaning, laying out and painting the markings, lettering and striping on Runway 2-20 and Runway 6-24. Plans and specifications are available at the office of R. F. Pyle, Engineer, 99 28th Street, Newport News, Virginia, on deposit of Twenty-five Dollars ($25.00) which will be refunded upon return of the plans and specifications within five (5) days after the opening of the bids. Prospective bidders are reminded that this is a Federal Aid job with the usual requirements as to payroll records, hours of work and rates of pay. The Commission Engineer will be at the Airport Manager's office Monday April 3, 1961, at 2 P.M. to show the prospective bidders the proposed work.

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone until June 5, 1961 and will then be publicly opened for the construction of a hospital building at Gorgas Hospital. Work consists of constructing a seven-story hospital building; the installation of electrical and mechanical equipment and service; grading, road relocation and road paving; the construction of a pedestrian over-pass and a pedestrian tunnel; all required sanitary sewer, storm sewer, electrical distribution, and appurtenant site work. Plans and specifications will be available after March 31 for examination in Procurement Office, Panama Canal Company, 21 West Street, New York 6, N. Y. Complete sets of data may be obtained upon payment of $50.00 deposit. For further information contact this office. Telephone BOwling Green 9-5380, Extension 73. Reference: PC-61-55.

OFFICIAL PROPOSALS

Bids: April 13, 1961

New York State Roadwork

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m., Eastern Standard Time, on April 13, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 505, SIZER STREET TO JEFFERSON STREET, NEW PROJECT NUMBER 1-81-2(25)83, OLD PROJECT NUMBER 1-1127(11), ONONDAGA COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-182.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Earl E. Towlson, District Engineer, New York State Department of Public Works, 333 East Washington Street, Syracuse, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made only in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $15,565.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: April 13, 1961

New Jersey Turnpike Authority

ADVERTISEMENT FOR PROPOSALS
CONTRACT NO. R-79

Proposals are invited for Contract No. R-79 which involves the fabricating and erecting of five toll booths and a canopy, and other incidental work for the new toll plaza at Interchange 12 of the New Jersey Turnpike in connection with the Carteret Interchange Improvement in Middlesex County, New Jersey.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of April 13, 1961, at which time and place said proposals will be publicly opened and read.

Contract documents may be examined during office hours on or after March 27, 1961, at the office of the Authority, and will be furnished upon payment of Five Dollars ($5.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

March 21, 1961
R-79

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Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. Permanent position with established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245, Engineering News-Record.

Structural Engineer—MS or PhD to conduct design and experimental studies of a variety of structures. Challenging and varied problems involving the application of high strength and constructional alloy steels. Experience not required but applicant should have a thorough understanding of structural behavior. Large research laboratory. Western Pennsylvania. Submit resume and salary requirements to P-6309, Engineering News-Record.

Permanent Position: Structural engineer with at least an M.S. degree from well recognized engineering school. Well grounded in the Theory of Elasticity to handle complex indeterminate structures. Excellent living conditions, good future for young and responsible engineer. Submit Graduate School credits. Location, North Carolina. P-6338, Engineering News-Record.

Engineer—Water Works—10 years experience in planning installation of pumps, wells, etc. Permanent employment with water works management company. Location—Philadelphia, Pa. Reply P-6357, Engineering News-Record.

Experienced sewer and water superintendent to be affiliated with established construction company in Illinois. Investment in company necessary. P-6378, Engineering News-Record.

Construction Office Managers—A large southern construction campany has openings for two (2) highly qualified office managers fully experienced in handling lump sum and cost plus multi-million dollar construction contracts. These men must be able to assume full responsibility for all fiscal matters of a field office and be willing to relocate periodically as required. Excellent salary and company benefits. Permanent position. Maximum age, 40. Send a complete resume and a recent photograph. P-6362, Engineering News-Record.

Civil Engineer—Registered or able to obtain registration in Ohio. With three years of experience in structures, highway and sewer work. Starting salary up to $8300, plus benefits, depending upon experience. Apply: City Engineer, 500 Municipal Bldg., Dayton 2, Ohio.

Midwest village of 20,000 requires Civil Engineer. Must be registered in Illinois. Salary open. Address: Commissioner of Streets and Improvements, 5156 Main Street, Downers Grove, Illinois.

Senior Engineer in Public Works Department. Experience required in all branches of Municipal Engineering for City of 40,000. Salary $6,500-$8,100 based on experience. Send detailed resume to: City Manager, Poughkeepsie, N. Y.

Village Engineer — Growing metropolitan community of Maplewood (pop. now 19,000). All phases of municipal engineering. Experience and registration required. Salary open. Apply to Village Clerk, 1900 Clarence Street, Maplewood, Minnesota.

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POSITIONS

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• POSITIONS VACANT

Soils Engineer. Graduate Civil Engineer with field experience in foundation investigation, testing, and laboratory management. Will supervise field exploration and soils laboratory testing for highway construction. Required to analyze field information and test data to develop design criteria and recommend construction technique. Salary, to be negotiated depending on experience. Location, Intermountain West. P-6187, Engineering News-Record.

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Overseas positions for graduate engineers with a minimum of five years experience on power house construction on a Multi-Purpose dam in Thailand. Civil experience should include supervision of construction on buildings preferably power houses. Electrical and Mechanical experience should include installation of penstocks, radial gates, fixed wheel gates, hydraulic turbines and governors, and the electrical and mechanical features of switch gear.

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Structural steel detailers and checkers, growing company, permanent work. P-6401, Engineering News-Record.

Assistant Town Engineer for small, but fast growing, New England town (pop. 7,500). College not required but preferred. Salary range $4,800. to $5,300. annually. Send resume to P-6419, Engineering News-Record.

Soils Technician with laboratory soils test, field exploration and fill control experience. Must be able to assume responsibility for inspection and supervision of earthwork construction. Send resume including photo and salary requirements. Nevada Testing Laboratories, Ltd. 300 West Boston, Las Vegas, Nevada.

Waterworks Superintendent. The City of Rhinelander, Wisconsin is accepting applications for the position of Water and Sewer Superintendent. Letters of application indicating experience, qualifications, training, references, and salary requirements shall be addressed to the Director of Public Works, Rhinelander, Wisconsin.

• POSITIONS WANTED

Civil Engineer, P.E., R.L.S., BSCE, MSCE. Resume upon request. PW-6376, Engineering News-Record.

Estimator-Engineer, 44, BSCE, P.E. 3 states, 15 yrs. experience in construction of multi-million dollar projects, from initial bidding purchasing, office engineering to job completion, incl. customer relations. Desires employment with opportunity with commercial and industrial contractor. PW-6373, Engineering News-Record.

• POSITIONS WANTED

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Project Engineer with diversified experience, about 12 years, of Design, Construction-Supervision, Contract Administration. Reports and specifications for bldgs, highways, dams, etc. Specializes in foundation problems and materials laboratory supervision. P. E. Licenses & M.S. degree, 42. Desires responsible position preferably with consulting engineers. Any location. Available this spring at end of overseas assignment. PW-6328, Engineering News-Record.

B.S.C.E. Age 37, 10 yrs experience supervision Power industry also exp highway & bridge engr. Prefer South or Midwest. Desire permanent loc. PW-6312, Engineering News-Record.

B.S.C.E., P.E., 32, 6 years exp. inspection, storm sewers, highways. Desires position West, Southeast. PW-6299, Engineering News-Record.

Construction Engineer. Registered civil. High professional standing. 30 plus years experience all phases water supply, sewage treatment, bridges, tunnels and heavy construction. Available as resident or project engineer to supervise construction of sizeable project for owner, consultant, contractor. PW-6437, Engineering News-Record.

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• POSITIONS WANTED

Electrical Construction Superintendent experienced in steam & hydro power stations, industrial plants, substations & distribution systems. Overseas or domestic. PW-6434, Engineering News-Record.

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Const. Engineer—Project—Field—12 yrs. diversified heavy const. exp. All phases Chemical & Industrial plants, navig. locks & mass concrete struct. Capable administ. & supv. Know cost, estimates, contract adm., job coord., procurements, engineering & organization. Projects to 80 M dollars. Age 43. Will travel. PW-6420, Engineering News-Record.

Project Manager-Project Engineer—B.S.C.E. —P.E.—Age 37—Experienced background includes design, construction management, estimating, contract negotiations of large construction projects. Desires responsible position. PW-6438, Engineering News-Record.

Labor Rel.—Per. Ad. B.S. Ind. Rel. 6 yrs. Craft exp. Grad. Trainee Program. PW-6424, Engineering News-Record.

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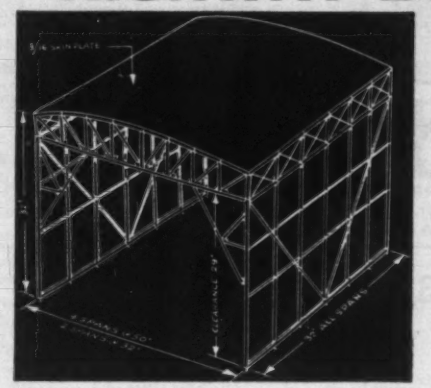

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ENR—T1/3

Cooperative Planning

IN CREATING A COMMITTEE made up of members of the Bureau of Public Roads and the Housing and Home Finance Agency (ENR Mar. 23, p. 34), President Kennedy can be charged with being inconsistent, but he should also be credited with being right. The inconsistency rests in the fact that he has just abolished 17 interdepartmental committees because they make it difficult "to clarify and pinpoint executive responsibility." But he is right in creating this committee because more joint and cooperative planning of urban highways and urban redevelopment is desirable.

This new group, moreover, seems destined for achievement. Federal Highway Administrator Rex M. Whitton demonstrated an awareness of the importance of urban highways to over-all city welfare when he was chief engineer of the Missouri State Highway Commission. Housing Administrator Robert C. Weaver's training in economics and experience in redevelopment work have left him with a similar appreciation. The BPR-HHFA committee will justify its existence even if it does no more than make high-level and regional-level members of the two agencies known to each other. Not long ago, cooperation between BPR and HHFA was almost unknown. It's improved recently, but not enough. Urban highways and urban redevelopment are too important to each other to be planned independently.

Perils of Pioneers

THE TASKS FACED by structural designers, fabricators and erectors of radio telescopes in meeting astronomic and electronic requirements stagger the imagination. Never before have engineers been required to design and build structures of such immense size nearly free of deflection and capable of closely controlled three-dimensional movement. No wonder some of the pioneers in this field have run into unforeseen difficulties.

Designers of the Navy's 600-ft-dia "Big Ear," being built at Sugar Grove, W. Va., are struggling to keep the weight of the movable superstructure within manageable limits (ENR Nov. 3, 1960, p. 19). They also are having a rough time working out details that are feasible to fabricate and erect and that will permit the telescope to perform as required. The fabricator of the 140-ft-dia radio telescope at Green Bank, W. Va., has been delayed by troubles with a key bearing and gear (ENR Mar. 23, p. 45). As a result, both projects will be completed at least two years later than originally planned.

Designers, contractors and supervising agencies for these projects deserve sympathetic understanding of their difficulties. Regardless of dashed hopes for earlier completion, if they can get these huge structures built and in good working order, they can be very proud of the achievement.

Successful completion of these telescopes will be a source of pride to all engineers, and may lead to techniques that can be adapted with great advantage for other types of structures. And if the telescope engineers bare their troubles and point out ways to avoid them, they can make their achievement of even greater value to the engineering profession.

Keeping Houses Out of Rivers

THE RECENT SPECTACLE of houses and residential streets standing in several feet of water in some areas of the Southeast heavily underlined one aspect of President Kennedy's water-resources message to Congress. The President said federal flood data should be made available to states for flood-plain zoning purposes.

One can easily maintain a degree of philosophic detachment when high water washes out a highway, floods a bridge or even damages a factory. Bridges by their nature are subject to the peril. Highways must cross rivers, and elsewhere may be economically feasible only in flood plains. Factories are built for profit, and if hardheaded appraisal indicates the advantages of a flood-plain location are worth the risk, then a damaging flood is merely a lost gamble.

Building or buying a house in an area of known flood recurrence, however, is not a risk the average homeowner would be willing to take. But often he gambles unknowingly. The risk is taken for him when a developer acquires a low-lying tract and builds houses on it. Today's easy mobility, characterized by almost casual relocations of people into unfamiliar regions, exposes increasing numbers of families to the chance of buying unknowingly into a flood-prone area. Some kind of a warning is obviously needed.

In other fields, foods and drugs for example, identifying and edifying labels are required. Why not something like this for a homesite?

A statement on the flood history of a homesite might be made a prerequisite for issuance of a building permit, and then registered permanently in the public records. Given such a warning, prospective buyers could then decide for themselves whether to risk flood-plain sites.

It would not be necessary to wait for formal flood-plain zoning to make something like this practicable. Although there are no official flood records of long standing for most localities, there is much useful information that can be turned up by a little research—in local newspaper files, waterside industrial plants, municipal utility offices and the like.

The warning label wouldn't be a cure-all for flood problems, but it might scare off enough potential buyers to reduce the pressure to develop flood-prone land. This would ease the problem of finding and instituting a more comprehensive answer, including full-scale flood-plain zoning.

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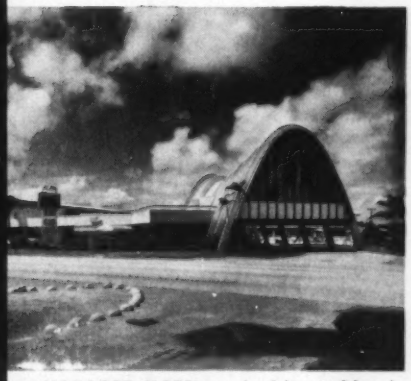

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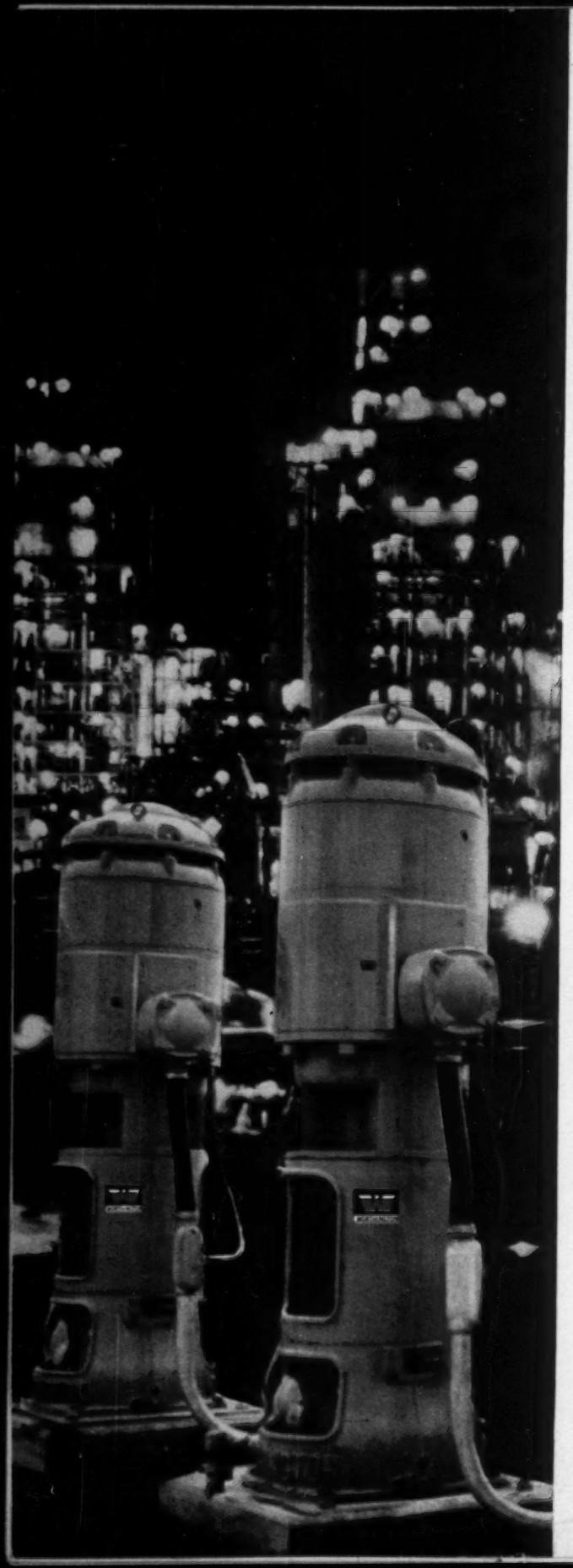

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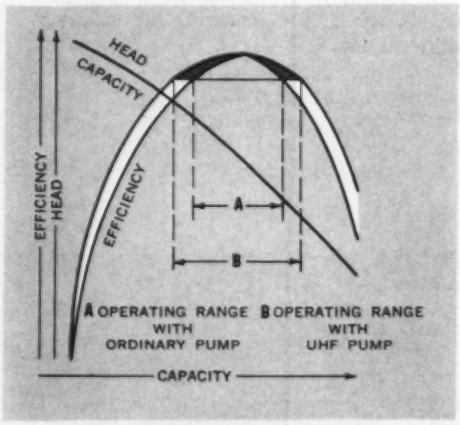

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